The Iron Age

A Review of the Hardware and Metal Trades.

Published every Thursday Morning by DAVID WILLIAMS, No. 10 Warren Street, New York.

Vol. XIII: No. 16. *New York, Thursday, April 16, 1874.* *Four Dollars a Year. Single Copies, Ten Cents.*

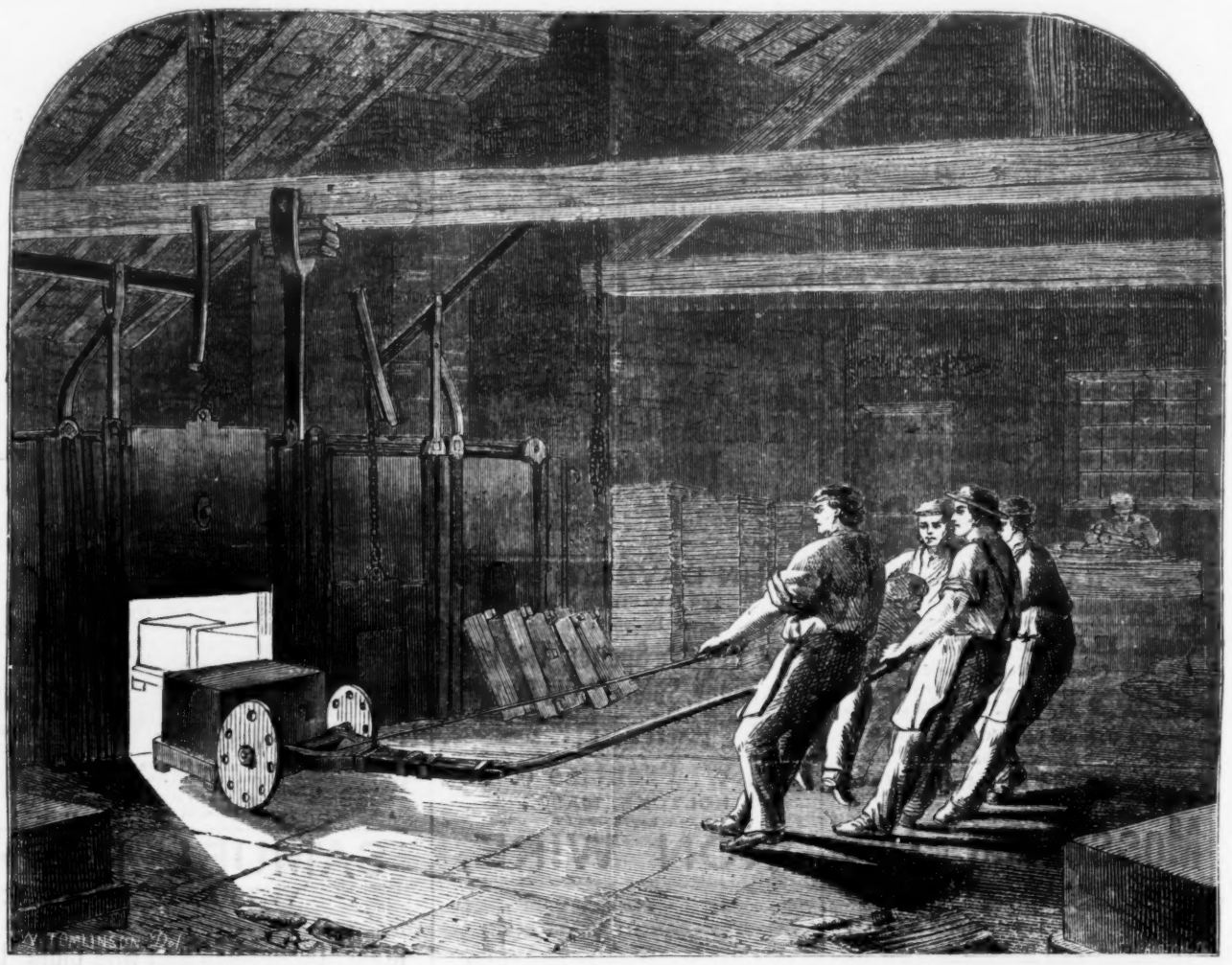
The Manufacture of Tin Plate.

The processes employed in the manufacture of tin plates are pretty well known to the readers of this journal from previously published descriptions, but as we have obtained two interesting engravings from Europe, showing the manner of heating and tinning the plates as practiced in the Welsh tin plate works, a few facts respecting their manufacture may not be uninteresting:

The bars of charcoal to be made into sheets are cut to the required sizes, brought to a cherry-red heat in a reverberatory furnace, rolled out to a certain length by gauge, "doubled" and returned to the furnace, rerolled, again doubled, heated and reheated. The several foldings of the sheets adhere slightly. After the sheets are cut down to size for tinning they are separated from each other by what is called opening. During the process of opening "stickers" and imperfect plates are thrown out, and the passed sheets then go into the "pickling room." There they are put into a hot pickle of dilute sulphuric acid, to be cleansed from oxidized and silicious matters, and undergo another rough examination in the "scouring process;" that is, any plate not cleansed is rubbed with sand and water. Defective sheets are again thrown out, and the sheets or plates are now passed into the annealing room.

ANNEALING.

The annealing furnace is a large reverberatory furnace capable of holding several annealing pots. The pot is composed of a stand of sufficient size to take the sheets, with a raised rim. Several hundred sheets are piled on the stand and a square, box shaped cast pot completes the pot. This is inverted over the sheets, and the space between the rim of the stand and the rim of the inverted pot is filled with oxide of iron, to lute it down and exclude the air. The pots are then put into the furnace until it is full, and the whole brought up to a cherry red heat, or a little beyond. About eight hours are necessary for its perfect saturation by the heat. When removed from the surface they are slowly cooled in a place free from draft, and then the pots are opened. The plates never lie perfectly flat, and should be of a dark straw color at the edges. If the air should get in in small quantities a deep blue color will cover the sheets more or less. The plates adhere slightly, are again separated, and ready for the second pickling room. The plates are then submitted to a hot, but more dilute, pickle of sulphuric acid, and again chemically cleansed; taken from the acid bath, they are well washed in running water, and kept in clean water until the tinman is ready for them.



MANUFACTURE OF TIN PLATES.—THE ANNEALING FURNACE.

TINNING.

The tinman takes the plates from the water bath (where they lie some hours) and plunges them wet into a bath of hot palm oil called the "grease pot." When they have acquired the temperature of the grease pot, they are removed with tongs and quickly submerged in a bath of tin. The oil mixed with the water from the plates floats at the top, forming a flux to cover the melted tin and prevent oxidation. With the tongs the sheets or plates are continually kept moving and separated, to insure the tin getting between all of the sheets. When the bath has recovered its heat, which it generally does in about half an hour, the tinman examines the charge, and finding that perfect amalgamation has taken place between the two metals, he removes them, in quantities convenient, with a tongs to the next bath, which is kept at a low temperature.

MANUFACTURE OF TIN PLATES.—"DUSTING OFF."

The temperature raised by the change from the "tinpot" is again allowed to cool down to a few degrees over the melting point of the tin, when the plates are taken in lots of a dozen or two at a time, and laid on an iron slab which is at the side, or head of the pot. The waste metal and grease run back into the pot, the slab being inclined. The workman then takes up sheet by sheet in the tongs, and dips each into another bath of fine metal kept at a heat little over melting point, immediately withdraws it, and places it in a rack immersed in a large pot of melted palm oil kept at the proper temperature, where they are allowed to remain a certain time. The sheets are then slowly lifted out of the grease by a boy, who separates them into proper lots by counting carefully, regulating the intervals of time between them. The grease recoils from the top plate, and, as little is left on the sheets, they are again placed on a rack in the open air to cool; when cool a lad takes each sheet in a tongs, and dips the lower edge into a small bath of melted tin, so regulated that the sheet can only enter to about the eight of an inch. It is kept long enough to melt off the drops of metal which adhered to the lower edge, and when lifted the sheet is struck to throw off the superfluous metal from the edge. The plates are again put into a rack and taken while warm to a bin of bran, where each sheet is thrust into and under the bran, to get rid of the grease which adheres. It is then passed on to a second and third hand, when the grease is pretty well left behind in the last bin, which is kept filled with new bran. The sheets are turned out covered with flour dust and bran, and dusted off with cotton shaggy cloth. The next process is

SORTING.

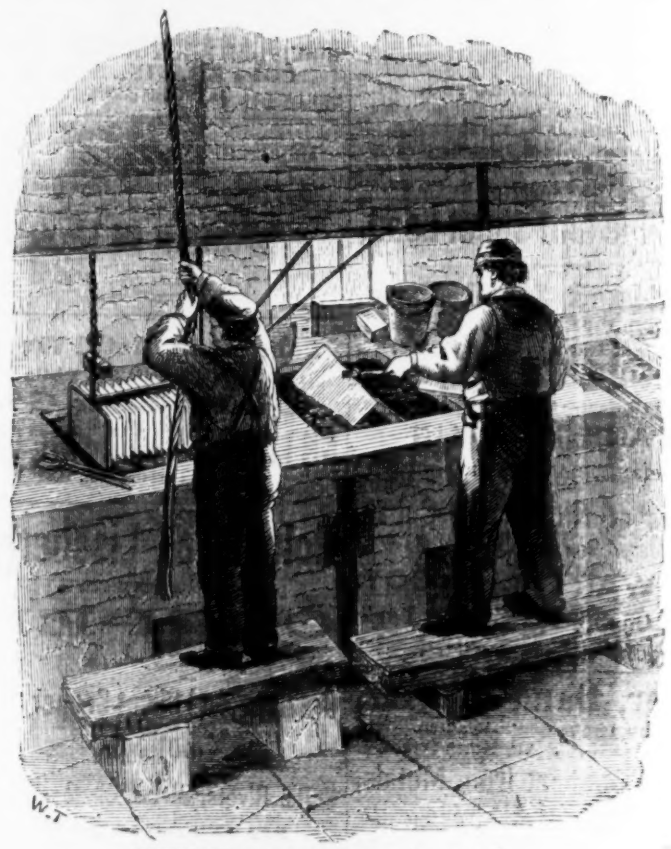
The finished sheets are laid on tables, and each sheet undergoes an examination by the sorters, who throws out those shearings which are defective in the iron or trimmings. The latter are reheated to regain the tin; the imperfect sheets are sold as "wasters" at a less price; the sheets are counted, and the box of one cwt. is composed of 225 sheets of 14x10.

New Iron Clads.

The new British iron-clad, *Inflexible*, which is to be what all her predecessors have been in turn, "the most powerful ship in the world," is thus described in the London *Standard*:

The *Inflexible* will be a turret ship, but will carry her sides 20 feet out of water. We hardly expect that this extraordinary extent of freeboard will be maintained throughout the entire length of the ship. It may also be apprehended—as we signified some months ago—that there will be certain peculiarities in the form of the hull, to obtain buoyancy. The two turrets will carry armor of 18 inch, and will be placed on a line oblique to the keel—one to starboard and the other to port—so that both may fire at the same instant end on, or very nearly so. This is a curious arrangement, and will probably meet with certain objections. The guns will be loaded outside the turrets, the muzzles being depressed so as to receive their charge up a species of hatchway constructed for the purpose. Mechanical means must necessarily be devised for lifting and moving the heavy weights represented by the shell and the cartridge. The ship will be without rigging, but her engines are to give her a rate of speed at least equal to that of the fastest of the existing iron-clads. Despite her superlative qualities the *Inflexible* will cost less than the *Minotaur*. Her gun powder will be enormous, and her armor a wonderment. At least, so we think them now. If we could only build such a vessel in a twelvemonth, instead of taking three or four years to accomplish the task, our confidence would be greater. It is now said that Krupp's breech-loading 2000-pounders are intended for sea service. As breech-loaders they are well adapted for such a purpose, providing the breech-loading is itself effective. But how rests the question of guns *versus* armor? Our 35 ton gun is equal to 15 inches or 16 inches of armor, and we may calculate that an 80-ton gun will penetrate 24 inches, unless the cunning device of the *Inflexible* breaks up the shell outside the second plate. In such warfare as we are now contemplating the first hit may prove momentous. If an entering projectile, in addition to its own explosion, were to fire one of those huge cartridges of which we have spoken, the effect between decks would be tremendous. The mere smoke would be a serious matter—far more so than in one of Nelson's ships with its many ports and free ventilation. For humanity's sake we can only hope that these preparations for war will secure the continuance of peace.

The first of the two iron clad frigates now building in England for the German government, and known as *The Kaiser*, was launched on the 19th ult. The hull was laid in May, 1872, and she will be ready for sea in June next. Her length between perpendiculars is 280 feet, her breadth of beam 62 feet 8 in., her tonnage, according to builders' measure, 5063 tons, her displacement 7600 tons, and she will steam at the rate of 14 knots an hour, and, being "ship" rigged, with a full amount of sail power, will, when under canvas, be able to attain a considerable rate of speed even without the aid of steam. Her engines are nominally of 1150 horse-power, but are in effect of 3000 indicated horse power, and she will carry eight boilers, beside an auxiliary one for working the capstan engine, steam pump, and steam steering gear. Nor is her armament, either offensive or defensive, a whit behind the excellence of her machinery. Fore and aft, from 5½ feet below the water line to the main deck, there runs an armor belt from 8 to 10 inches thick, with a teak backing of similar strength, while the upper and main deck beams are completely covered with steel plating. So much for her defensive powers. For her powers of attack she carries on her main deck an armor-plated battery of eight 22 ton steel breech-loading guns arranged to fire broadside, the two foremost guns, one on each side, being also adapted for use as bow chasers, and capable of being trained to cross fire before the vessel, while the two after guns can be trained to fire within 15 degrees of the line of the keel. In addition to these there will be another similar gun of 18 tons placed aft, also protected with armor plates on a teak backing, and capable of being trained to an angle of 15 degrees each side of the middle line, thus making, with the guns of the central battery, a complete all round fire.



MANUFACTURE OF TIN PLATES.—"TINNING."

The New Iron Fortifications for Germany.

The *Pall Mall Gazette* says:

The drilled cast iron gun stands and iron clad revolving turrets, which have since 1869 been completely tested in a series of experiments on the great artillery shooting ground at Tegel, will now be used for the new works to be begun in the German fortresses.

Two of these turrets will maintain a secure communication between the forts of St. Quintin and St. Privat at Metz, and two of the flank works which will be attached to these forts, so as to command the valleys of the Mosselle and the Scille, will probably be made in the form of the gun stands above referred to. All the iron for these fortifications can be cast on the spot, of any required thickness, in foundries specially erected for the purpose.

Each of the works will be constructed with a few huge plates, which will fit into one another by means of joints made in the casting. The gun stands are each made to hold one gun only, but a number of them may, if necessary, be placed side by side, and they may be connected so as to form a single work. The embrasures are made so small as to prevent the entrance of any projectile fired at them, and the whole is protected by an earthwork with apertures to carry away the gas and diminish concussion.

During the trials of 1869 seven shots from a 300 pounder (the 24 centimetre gun) hit the plate of a gun stand of this kind without disabling it for further use.

The Troy *Times* states that orders are still very slack in the mills, and that owing to the decreased demand from the railways there is not likely to be any great revival for some time to come. The different mills continue running, but will shut down as soon as orders are not up to the requisite amount to keep them going without loss.

Metals.

ANSONIA

BRASS & COPPER CO.

19 and 21 Cliff Street,

(Adjoining Office of Phelps, Dodge & Co.)

Sheet Brass, Planished Brass, Polished Brass Door Rails, Brass Wire, Hayden's Patent Brass Kettles, Brass Tubing, Lamp Burners, Sun Burners,

Sheet Copper, Planished Copper, Copper Rivets & Burs, Braziers' & Bolt Copper, Braziers' Rivets, Copper Tubing, Copper Bottoms, Copper Wire, Iron Wire, Fence Wire.

A large variety of Wood and Bronze Case Clocks.

MANUFACTORIES AT ANSONIA, CONN.

Phelps, Dodge & Co.,

IMPORTERS OF

TIN PLATE,

Sheet Iron, Copper, Pig Tin, Wire, Zinc, etc.

MANUFACTURERS OF

COPPER and BRASS.

Cliff St., bet. John and Fulton,

NEW YORK.

T. B. CODDINGTON & CO.,

25 & 27 Cliff St., New York.

Importers of

TIN PLATES,

And METALS of all descriptions.

A. A. THOMSON & CO.,

Importers and Dealers in

Tin Plate, Sheet Iron,

ZINC, COPPER, WIRE,

Block Tin, Spelter, Solder, &c.

Nos. 213 and 215 Water and 119 Beekman Sts.,

NEW YOLK.

P. O. Box, 61.

N. L. CORT & CO.,

Importers and Dealers in

Tin Plate, Pig Tin,

SHEET IRON, SOLDER, ZINC, &c., &c.

220 & 222 Water and 115 & 117 Beekman Streets,

N. L. CORT, C. P. CORT, NEW YORK.

SCOVILL MFG. CO.

No. 4, Beekman St., New York.

MANUFACTURERS OF

SHEET AND ROLL BRASS,
BRASS AND COPPER WIRE,
GERMAN SILVER, BRASS BUTT HINGES,
KEROSENE BURNERS.
METAL BLANKS CUT TO ORDER.
CLOTH AND METAL BUTTONS, in every variety.

PHOTOGRAPHIC GOODS.

AGENCIES:

4 Beekman Street, New York,
17 Beach Street, Boston,
137 State Street, Chicago.

Manufactory, WATERBURY, CONN.

Lead Pipe and Sheet Lead,

Improved

Tin Lined Lead Pipe,

Block Tin Pipe, Bar Tin, Pig Tin, Pig Lead, Bar Lead, Solder, &c.

Colwell Lead Company,

No. 213 Centre Street, New York.

EVANS & ASKIN

BIRMINGHAM, ENGLAND,

Refiners of Nickel and Cobalt.

SOLE AGENTS,

VAN WART & McCOY,

43 Chambers St., New York.

Nickel and Cobalt always in stock.

Fuller, Dana & Fitz,

Importers and Commission Merchants.

BOSTON, . 110 North Street,

Tin Plates, Sheet Iron, Metals, IRON, STEEL, Etc.

Wrought Iron Beams, Etc., for Buildings.

Exclusive Boston Agents for the sale of The "Burden Best" Iron. *Tensile strength* 78,000 lbs. Union Iron Mills *Own Patent* Beams, Channels, Etc. Patent Cold Rolled Shafting. The Celebrated Bessemer Steel. Brown's *Original* Concord Axles. The Salem Lead Co.'s Lead Pipe.

Morris, Tasker & Co.'s Lap Welded Boiler Tubes.

☞ Swedish, Norway, English, American, and Scotch Iron. Russia Sheet Iron.

FULLER, DANA & FITZ'S *Price List on application.*

Metals.

Waterbury Brass Co.

JOHN SHERMAN, Agent,

No. 52 Beekman Street, NEW YORK.

Mills at WATERBURY, CONN.

Sheet, Rolled and Platers' Brass,

GERMAN SILVER,

Copper, Brass and German Silver Wire,

BRASS AND COPPER TUBING,

COPPER RIVETS AND BURS,

BRASS KETTLES,

WASH BASINS,

Door Rail, Brass Tags & Step Plates.

BENEDICT & BURNHAM MFG. CO.

MANUFACTURERS OF

Rolled and Sheet Brass and German Silver, Brass, Copper and German Silver Wire, and Beading.

Plain and Fancy Tubing, Brass and Copper Rivets and Burs, Brass and German Silver Castings, Piano-Forte and Wrought Brass Butt Hinges, Coal Oil Burners, Lamps and Lamp Trimmings of every description, Patent Lamp Scissors, &c., &c.

Depots—78 Reade St., N. Y., 44 Sudbury St., Boston, and 17 N. Seventh St., Philadelphia.

Capital $400,000.

CHAS. BENEDICT, President and Treasurer.
CHAS. DICKINSON, Secretary.

TIN PLATE

and

PIG TIN,

In Store and For Sale by

A. A. THOMSON & CO.

213 and 215 Water St., NEW YORK.

W. & J. TIEBOUT,

Manufacturers of

BRASS GOODS,

Galvanized & Ship Chandlery HARDWARE.

290 Pearl Street, New York.

A. HARNICKELL

Offers for sale all kinds of

COPPER.

Old Copper bought and taken in exchange.

22 Cliff Street, New York.

Mosselman Zinc.

Assorted widths and numbers, by cask or sheet, in store, at lowest rate.

A. A. THOMSON & CO.,

Box No. 61. 213 and 215 Water Street, N. Y.

SOLDER.

For Sale at lowest market rates, by

A. A. THOMSON & CO.,

Box 61. 213 & 215 Water Street, N. Y.

JOHN W. QUINCY,

98 William Street, New York,

Dealer in

AMERICAN AND FOREIGN SPELTER,

COPPER, TIN, NICKEL,

And Metals generally.

Geo. A. Boynton,

BROKER IN IRON

70 WALL ST, N.Y.

Tubal Cain Metal Works,

1320 Callowhill St., Phila.

Du Plaine & Co.,

ANTI-FRICTION METALS

Best and Cheapest.

Holmes & Lissberger,

Importers and Dealers in

COPPER,

Manufacturers of

Braziers' and Sheet Copper, Kettle Bottoms,

Bolts, Rivets, Strips, Circles & Tubes,

PIG AND RAILROAD IRON,

Pig & Ingot Copper, Spelter, Solder, Tin & Lead.

255 & 257 Pearl Street, N. Y.

Agents for the New Haven Copper Co.

Metals.

The Plume & Atwood Mfg. Company,

MANUFACTURERS OF

SHEET and ROLL BRASS and WIRE,

German Silver and Gilding Metal,

Copper Rivets and Burs,

Kerosene Burners,

Shoe Eyelets, Lamp Trimmings, &c.

80 Chambers Street, New York.

13 Federal Street, Boston.

Rolling Mill, THOMASTON, Ct. | Factories, WATERBURY, Ct.

EDWARD MILLER & CO.,

4 Warren Street, N. Y.

(1st Store from Broadway.)

Manufacturers of

Sheet Brass, Tin and Brass Lanterns, Kettle Ears and Petroleum Can Tops, Spouts and Trimmings, Tea and Coffee Pot Spouts,

Patent Spun Brass Kettles, Engine & Machinery Oilers, Kerosene Lamps, Burners and Trimmings, And Sheet Metal Wares generally.

MILL AND FACTORIES, MERIDEN, CT.

BROOKLYN Brass and Copper Co.,

100 John Street, N. Y.,

Manufacturers of

Copper Sheets, Bolts, Wire, Tubes & Bottoms, Roll Brass, Wire, Tubing & Rivets.

Zinc Plates, Sheets and Tubes. Also, Patent Metal for Roofing, Linings for Bath Tubs, Refrigerators, &c.; considered the best metal for Signs and Reflectors.

JOHN DAVOL & SONS,

100 John Street, N. Y.,

Dealers in

Ingot Copper, Spelter, Tin, Lead, Antimony, Solder & Old Metals.

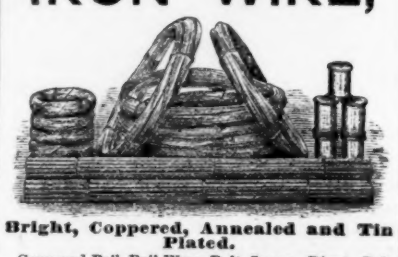
Wire, etc.

Geo. W. Prentiss & Co.,

HOLYOKE, MASS.,

MANUFACTURERS OF

IRON WIRE,



Bright, Coppered, Annealed and Tin Plated.

Coppered Pail Bail Wire, Bolt Screw, Rivet, Belt Hook and Buckle Wire; Wire for the manufacture of Pins, Hair Pins, Wire Cloth, Heddles, Reeds, &c.

Also, Clock, Machinery, Spiral Spring and Piano Pin Wire, Plated Piano String Covering Wire, Plated Hook and Eye and Button Eye Wire, Tinned Broom Wire, fine Tinned Wire, and Tin-Plated Wire of all sizes and for all purposes. A specialty is made of the manufacture of

GUN SCREW WIRE

of all sizes up to one half inch in diameter, straightened and cut to order. Special attention is giving to finishing orders to sample for particular purposes, where exactness of size is required. ☞ We work only the best Brands of Norway and Swedes Iron.

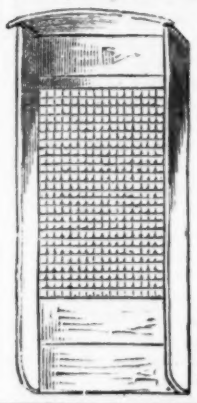
WEST BROADWAY WIRE WORKS,

90 West Broadway, New York.

MANUFACTURES

Brass, Copper and Iron Wire Cloth

of Superior Quality.



The Heavy Patent Spark Arrester Wire Cloth, Fancy Car Baskets, &c. Patent Iron Wire Railing, for Banks, Offices, Cemeteries, &c., Extra Strong Coal and Sand Screens, Coal, Meal and Hair Seives, Meat Safes, Fenders and Grate Guards.

Sole Agent for D. M. Weston's Patent Centrifugal Lining for Sugar Machines. All kinds of Wire Work made to order. Orders thankfully received and promptly executed by

A. W. HOPKINS.

ROEBLING'S WIRE ROPE

For Best

IRON or STEEL WIRE HOISTING, RUNNING or STANDING ROPES, or BEST GALVANIZED CHARCOAL WIRE ROPES FOR SHIP'S RIGGING,

Address, JNO. A. ROEBLING'S SONS, Manufacturers, Trenton, N. J. or 117 Liberty St., N. Y.

Wheels and Rope for transmitting power long distance. ☞ Send for Circular and Pamphlet.

Wire, etc.

National Wire and Lantern Works.

Warehouse, 45 Fulton Street, New York.

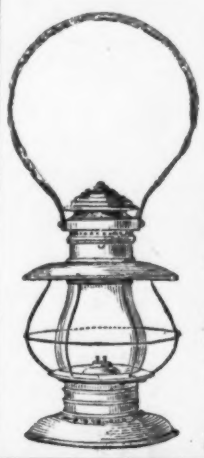
HOWARD & MORSE,

MANUFACTURERS OF

BRASS, COPPER AND IRON

WIRE CLOTH,

Ship and Railroad Lanterns,



Signal Lights, Conductors' Lanterns,
ADJUSTABLE GLOBE HAND LANTERN,
DESK AND OFFICE RAILING
Riddles, Coal and Sand Screens,
NURSERY FENDERS & SPARK GUARDS
Ornamental Wire Fence.

R. D. WOOD & CO.,

PHILADELPHIA,

Manufacturers of

Cast Iron Water and Gas Pipe, Lamp Posts, Retorts, &c.

Also, Race & Mathews' Patent Hydrant. This Hydrant is perfectly anti-freezing, is the most ornamental and the cheapest made.

R. PAINE, Selling Agent, Office, 173 Broadway, N. Y.

Wire, etc.

Washburn & Moen Mfg. Company

WORCESTER, MASS.

Established 1831.

PHILIP L. MOEN, Prest. WM. E. RICE, Treas
CHAS. F. WASHBURN, Sec'y

MANUFACTURERS OF

IRON AND STEEL WIRE.

WIRE RODS of all Grades; Round Iron, Rivet quality, 5-16 in. to ½ in., cut to any length.

Owners and exclusive Operators of the

PATENT CONTINUOUS MILL,

Producing Iron and Steel WIRE, in coils of 100 pounds, without SEAM OR WELD.

Plain and Patent Galvanized Telegraph Wire,

Market and Stone Wire, Annealed Fence and Grape Wire in long lengths; Coppered Pail-Bail Wire; Rope, Bridge, Bolt, Screw, Rivet, Buckle and Chain Wire. Wire for the manufacture of Card Clothing, Heddles, Reeds, &c. Piano-string Covering Wire, Tinned Broom Wire and Tinned-plated Wire of all sizes. A specialty is made of Clock, Machinery, Gun Screw and Spiral Spring Wire, and Refined Wire to Pattern for particular purposes, from selected stamps of Norway Iron. Any grade of Wire furnished, Annealed, Bright, Polished, Coppered, Galvanized or Tin Plated. Wire furnished, Straightened and Cut to any length.

Steel Crinoline Wire, Patent Linen finish.
Unrivalled Steel Music Wire.

Steel Wire for Springs, Needles and Drills. Market Steel Wire kept in stock, all sizes.

Warehouse, 42 Cliff Street, NEW YORK.

GILBERT, BENNETT & CO.,

GEORGETOWN, CONN.,

MANUFACTURERS OF

Iron Wire, Curled Hair & Glue

Brass, Tinned and Iron Wire Sieves, Coal, Oat and Hair Sieves, Hair and Wire Gravy Sieves, Brass and Iron Riddles, Brass and Iron Wire Cloth, Cheese Safes, Coal and Sand Screens, Wire Ox Muzzles.

Also Painted Screen Wire Cloth.

Wood Handle Stove Cover Lifters, Coal Hods Pressed and Patent Cast Shovels, Stove Scrapers and Pokers, Galvanized Conductor Strainers.

GILBERT'S RIVAL ASH SIEVE.

BLOOD'S PATENT FLOUR SIEVE.

Warehouse, 273 Pearl Street

NEW YORK.

☞ All kinds of Galvanizing done expeditiously, and on reasonable terms.

The highest price paid for Cattle's Tails and Hog's Hair.

MANUFACTURERS OF THE

UNION METALLIC CLOTHES LINE WIRE,

the best in use. Agents wanted.

BIRMINGHAM, ENGLAND

SAMUEL A. GODDARD & CO.,

Commission Merchants and General Agents,

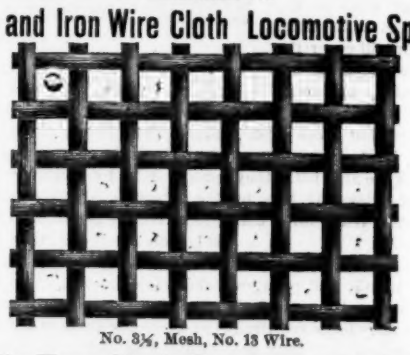
execute orders for British manufactures on the lowest terms, and collect and forward goods for a very moderate payment. Agents for the sale of North Staffordshire Iron of a standard quality.

SAMUEL PARKER & CO.,

WETHERSFIELD, CONN.

Manufacturers of

Brass, Copper and Iron Wire Cloth Locomotive Spark Wire Cloth,



No. 3¼, Mesh, No. 13 Wire.

Ox Muzzles, Wire Flower Stands, Brass, Iron and Galvanized Riddles.

STEEL CASTING BRUSHES.

Steel & Rattan Brooms & Flue Brushes, Plain & Landscape Wire, Window Screen Cloth a specialty; Wire Window Guards, etc.

Send for Price List.

UNION EYELET CO.,

PROVIDENCE, R. I.

MANUFACTURERS OF

EYELETS,

of every description.

B. Long, A. B. 14, F. P 1, Extra B. Long, Tag, Corset, Suspender, Bustle, Skirt, Stationer's, A., B. &c., &c.

All orders should be addressed to

Howard, Sanger & Co.,

Selling Agents,

105 & 107 Chambers St., N. Y.

Putnam's Government Standard FORGED

HORSE SHOE NAILS.

Manufactured from the best of NORWAY Iron, and warranted to give entire satisfaction.

S. S. PUTNAM & CO.,

NEPONSET, MASS.

Silicon in Pig Iron.

BY E. H. MORTON, F. C. S.

The author was induced to make a few experiments upon the subject of this paper, by noticing that silica was obtained in the insoluble residue when pig iron containing a large quantity of silicon was dissolved by dilute sulphuric acid *in vacuo*, instead of silicon, which might have been expected as the result of the decomposition of the pig iron under these conditions. This fact appeared to clearly point out that the theory of the silicon being *intimately mixed* with the pig iron was untenable, at least as regards this particular pig, which was a No. 1 Bessemer iron containing 4·612 per cent. of silicon, and was, therefore, not at all unlikely to contain silicon in admixture, if that element ever occurred in pig iron in such a condition. A considerable number of experiments were made with the view of ascertaining how far this conclusion was correct. Weighed quantities of the Bessemer pig iron were placed in sealed tubes with Nordhausen sulphuric acid, in atmospheres of carbon dioxide and hydrogen, and also *in vacuo*: the tubes were then heated in an air bath by two Bunsen burners for twenty-four hours, but in every case the silicon contained in the pig iron had been converted into silica, and a small quantity of sulphur dioxide formed in the tube, which occasioned sufficient pressure to blow the top off the tube when cracked with a file. On examining the insoluble residue from these experiments under the microscope, perfectly transparent crystals of silica were observed, interspersed with opaque pieces of the same substance. When these insoluble residues were treated with hydrofluoric acid, complete solution was effected. The next attempt to isolate the silicon in this pig iron was made by heating weighed quantities of the iron with an excess of pure iodine in sealed tubes, all air being first displaced by carbon dioxide, the same heating arrangement being used as in the sulphuric acid experiments. At the end of twenty-four hours, all iodine vapor having disappeared, one of the tubes was opened and the contents analyzed, with the following results:

Iodine	76·432 per cent.
Iron	20·013 "
Silica	1·709 "
Carbon	0·759 "
	98·913

Directly the tube was cracked the pressure of gas blew the top off. The contents consisted of dull red lumps, the whole of the iron having been converted into ferrous iodide, as the above figures corresponds to the formula FeI_2. There can be little doubt but that the silica which was formed in this experiment was due to a slight decomposition of the carbon dioxide, with which the tube was filled, the greatest part of the silicon having been converted, in all probability, into an iodine compound; for, although iodine vapor is without action upon silicon under ordinary conditions, it is highly probable that when silicon in the nascent state is presented to iodine vapor, a compound of iodine and silicon may be formed. These results were confirmed by several other similar experiments. This pig iron was also carefully tested for graphitoidal silicon, by treating the iron with hydrofluoric acid; the insoluble residue was filtered off, and ignited to get rid of the carbon, when a mere trace of a dark powder remained, which proved to be iron. From these results it may fairly be concluded that the silicon contained in pig iron does not exist in a state of mechanical mixture, but exists combined with a portion of the iron as a silicide of iron, in the same manner that carbon exists as a carbide of iron, only differing from carbon in so far that it does not exist in a graphitoidal pig iron. If the pig iron used had contained any uncombined silicon, it would have been found in the insoluble residue from the experiments with Nordhausen sulphuric acid and hydrofluroic acid, as it is insoluble in even the latter acid after having been strongly heated; and as any uncombined silicon must have been heated intensely in the blast furnace, there can be little doubt that, as a rule, pig iron does not contain any uncombined silicon.

The author then made the following experiments in order to ascertain whether or not the hypothesis of the combination of the silicon with the iron was correct: 0·1624 grm. of the Bessemer pig iron was placed in a platinum boat, which was then introduced into a porcelain tube. A current of carbon dioxide was passed through the tube to displace the air, after which pure dry hydrogen was passed through until all the carbon dioxide had been driven out. The portion of the tube which contained the boat was then heated for five hours to a very bright red heat in a Fletcher's gas furnace, the current of hydrogen being maintained until the tube was cold. The boat was then withdrawn and weighed, when it was found that a loss in weight of 0·004 grm. had taken place. The gas, as it left the apparatus, was passed through a wash bottle containing a weak solution of pure caustic potash (prepared from alcohol); at the end of the experiment this solution was made acid with pure hydrochloric acid, evaported to dryness, and ignited, when an insoluble residue of silica was obtained which gave 0·344 per cent. of silicon on estimation. The iron in the boat (which, after its withdrawal from the tube, showed no sign of oxidation) was analyzed, with the following results:

Iron	92·018 per cent.
Silicon	4·130 "
Graph. carbon	1·622 "

For comparison with the above analysis is subjoined the analysis of the pig iron used:

Iron (by difference)	92·375 per cent.
Graph. carbon	2·800 "
Silicon	4·612 "
Phosphorus	0·110 "
Sulphur	0·103 "
	100·000

This shows that there was a loss of silicon to the amount of 0·482 per cent. The above experiment was repeated several times with almost identical results. It will be observed that the amount of silicon found in the caustic potash solution very nearly corresponds with the amount of loss of silicon sustained by the iron operated upon; thus, 4·130 per cent. × 0·344 per cent. = 4·474 per cent. silicon, instead of 4·612 per cent., the difference being 0·138 per cent. In the event of the silicon being in combination with the iron, the author calculated in the above experiment upon the reducing power of hydrogen being able to decompose the silicide of iron, with the formation of silicuretted hydrogen, which would be decomposed by the caustic potash solution; and this appears to have taken place. Possibly the temperature of molten iron is required to effect the decomposition of the whole of the silicide of iron, or else the attraction of iron for silicon is so strong as to defy, in great measure, the reducing power of hydrogen. This last hypothesis is by no means improbable when the high temperature of molten iron is taken into account; for the fact is pretty generally admitted that chemical affinities are frequently reversed in the presence of an intense temperature.

A sample of white pig iron containing a large quantity of silicon having been given to the author, he thought it might be interesting to ascertain whether hydrogen had the same effect upon the silicon contained in the white iron as it had upon that contained in the Bessemer iron used in the preceding experiments. 0·1420 grm. of the white iron was heated in the same apparatus, and under the same conditions that existed in the preceding experiments, for six hours at nearly a white heat. When cold the iron was analyzed, as was also the caustic potash solution, with the following results:

Iron	89·201 per cent.
Graph. carbon	1·060 "
Silicon	4·287 "

Caustic potash solution: Silicon = 0·494 per cent.

The composition of the white iron used is shown by the following analysis:

Iron	90·000 per cent
Graph. carbon	2·975 "
Silicon	4·704 "
Undetermined	2·321 "
	100·000

The amount of silicon found in the caustic potash solution is 0·077 per cent. more than is required to account for the loss of silicon sustained by the iron used, which amount may be said to be within the limits of error of experiment.

The following table shows the amounts of loss of silicon sustained by the iron used in these experiments, and also the amounts of silicon found in the potash solutions:

	Loss of Silicon.	Silicon found in Potash Solution.
Bessemer pig iron	= 0·482 per cent.	0·344 per cent.
White "	= 0·417 "	0·494 "

On comparing the results obtained from the two kinds of iron used, it is evident that the effect of hydrogen upon the silicide of iron is identically the same in both cases, and this has led the author to believe that the amount of silicon lost by the iron in each case is due to the silicide of iron containing an atom of non-saturated silicon, or, in other words, that the silicide of iron was super-saturate, and, consequently, the non-saturated atom of silicon united with the hydrogen, leaving a lower silicide of iron undecomposed. Whether this is the case or not can only be decided by treating samples of iron containing smaller quantities of silicon in the same manner, and observing whether there is any loss of silicon sustained by them. These, and other experiments upon this subject, the author hopes to communicate shortly.

Another curious point to be noted in the experiments with hydrogen is that a loss of graphitic carbon has occurred both in the Bessemer and white iron, and the loss in each case is somewhat about the same amount. The author is at present unable to offer any definite explanation of this circumstance, except that the loss cannot be due to the action of oxygen, because, if that had been the case, an oxidation of the iron must have been apparent.

In conclusion, it may be fairly considered, from these experiments, that silicon in pig iron is contained as a chemical compound of iron and silicon, and not as a mechanical mixture.—*Newport Mon. England.*

The Royal Engineers of the Works Department, Royal Arsenal, Woolwich, before commencing the extension works at the new iron pier opposite the Royal Gun Factories, decided upon sinking an experimental iron cylinder by screwing it into the earth, a method which, it is understood, has never before been attempted on so large a scale, the cylinder being upward of five feet in diameter. The work is being done by workmen from Hamilton's Windsor Iron Works, Liverpool, who were the constructors of the pier, and the cylinder had been screwed into the bed of the river a depth of nine feet, when it came upon some obstruction, which proved to be the trunk of an old oak tree in a good state of preservation, part of the remains, probably, of an ancient forest, which, according to numerous evidences, formerly flourished on both sides of the river in places now one or two fathoms under water. This obstruction is being bored through, portions of the oak being preserved as curiosities, and there is no doubt of the ultimate success of the experiment.

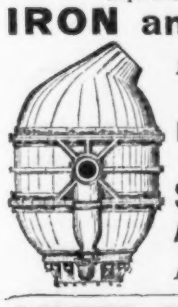
The Hooper Telegraph Works have received a certificate from the engineers of the Western Brazilian Telegraph Company, Sir William Thomson and Professor Fleeming Jenkin, that the cables of that company from Pernambuco to Rio Janeiro have been successfully laid, and have answered the tests for the stipulated period after submersion. The portion of cable from Para to Pernambuco having been previously certified, the Hooper Company has now completed the contract, and telegraphic communication along the indicated portion of the South American coast is permanently established.

Iron.

NEW YORK.

GA M'L G. SMITH & CO.,
IRON WAREHOUSE,
342, 344 & 346 Pearl Street, New York.,
Importers and Dealers in
IRON AND STEEL,
COMMON AND REFINED BAR IRON,
SHEET AND PLATE IRON,
Rod, Hoop, Band, Scroll, Horse Shoe, Angle and Tee Iron,
PIG IRON,
OLD RAILS,
WROUGHT IRON BEAMS.
Beams of all sizes and shapes made to order.

PIERSONS & CO.,
Established 1790,
22 & 26 Broadway, 77 & 79 New St.,
NEW YORK CITY,
AGENTS
Burden's Best Iron
And Burden's H. B. & S. Iron.
All sizes and shapes in stock.

JACKSON & CHACE,
206 & 208 Franklin St., N. Y.,
Importers and Dealers in
IRON and STEEL.

Agents for
JOHN A. GRISWOLD & CO'S
Bessemer Steel.
MACHINERY STEEL,
Cast Steel and
SPRING STEEL,
ANGLE and T IRON.
Special Irons for Bridge and Architectural Work.

ABEEL BROTHERS,
Successors to JOHN R. ABEEL & CO.,
Iron Merchants,
190 South Street and 365 Water, N. Y.
ULSTER IRON
A full assortment of all sizes constantly on hand.
English and American Refined Iron of choicest brands.
Common Iron.
Band, Hoop and Scroll Iron.
Sheet Iron.
Norway Nail Rods.
Norway Shapes.
Cast, Spring and Tire Steel, etc.

Alfred R. Whitney,
Importer and Dealer in
IRON AND STEEL,
Well assorted stock of
Angle and T Iron,
To 30 feet in length, constantly on hand.
56, 58 & 60 Hudson, and 49, 51 & 53 Thomas Sts., N. Y.
English and American Manufacturers'
AGENT FOR IRON
Used in Construction of
Fire-Proof Buildings, Bridges, &c.
Books containing Cuts of all Iron now made, sent by mail. Sample Pieces at office.
Please address 58 Hudson Street.

BORDEN & LOVELL,
Commission Merchants
70 & 71 West St.,
Wm. Borden, L. N. Lovell, New York.
Agents for the sale of
Fall River Iron Co.'s Nails, Bands, Hoops & Rods,
AND
Borden Mining Company's Cumberland Coals.

A. B. Warner & Son,
IRON MERCHANTS,
28 & 29 West and 52 Washington Sts.
BOILER PLATE,
Boiler Tubes, Angle, Tee & Girder Iron, Boiler and Tank Rivets.
Sole Agents for the celebrated
Eureka," Pennocks,
Wawasset," Lukens,
Brands of Iron. Also all descriptions of Plate, Sheet, and Gasometer Iron. Special attention to Locomotive Iron. Fire Box Iron a specialty.

Iron.

NEW YORK.

Conklin & Huerstel,
"IRON MERCHANTS,"
99 Market Slip, N. Y.
English and American Refined Iron,
COMMON IRON,
Band, Hoop and Scroll Iron,
Horse Shoe Iron & Horse Nails,
Norway Nail Rods and Shapes,
Cast, Spring, Toe Calk and Bessemer Tire Steel.
Sole Agents for the Celebrated Horse-Shoe Brand
HORSE RASPS.

WM. GARDNER,
575 Grand, 414 Madison & 309 Monroe Sts.
Bar, Hoop, Rod, Band and Horse Shoe Iron.
AGENT FOR
Best Norway N. R. & Shapes,
Spring, Toe Calk, Tire & Sleigh Shoe Steel.

Geo. A. Boynton
BROKER IN IRON
70 WALL ST, N.Y.

POWERVILLE
ROLLING MILL,
JOHN LEONARD,
450 & 451 West Street, NEW YORK.
Manufacturer of all sizes of MERCHANT IRON and HOOPS. Also Manufacturer of
Best Charcoal Scrap Blooms.
And Dealer in Old and New Iron,
Steam Engines, Boilers and Tanks.

GILEAD A. SMITH & CO.,
23 Change Alley, Lombard St., London. No. 30 Pine St., N. Y. P. O. Box No. 5070.
RAIL ROAD IRON
In Ports of New York & New Orleans.
Steel Rails of most approved Makers.
Importers of Old Iron Rails for re-rolling.
Bills of Exchange on Imperial Bank, London.

Marshall Lefferts, Jr.,
90 Beekman St., New York,
MANUFACTURER OF
AMERICAN
Galvanized Sheet Iron,
AND AGENT FOR THE
Easton Sheet Iron Works, Easton Pa.
MANUFACTURER OF
Best Bloom, Charcoal & Refined Sheet Iron.
Galvanized Telegraph and Fence Wire
Galvanized and Tinned Roofing and Slating Nails.
Galvanized Tea Kettles.
Galvanized Hoop Iron of all widths.
Galvanized Staples.
Corrugated Iron for Roofing, plain or gal'd.
Galvanized Bars and Chains for Cemetry Railing.

S. WHITNUM,
Manufacturer and Galvanizer of
Coal Hods, Water Pails, Baking Pans, &c.
Galvanizer of Sheet Iron, Nails, Spikes and Tinned Roofing Nails, Wire, Hoop and Band Iron. Iron Work for Cemetery Purposes furnished complete.
Factory, cor Clay and Franklin Sts.,
GREENPOINT, L. I.

AMAZON INS. CO.
Cincinnati, O.
Cash Capital, - - $500,000.
WITH AMPLE
Re-Insurance Reserve.
GAZZAM GANO, President. B. D. WEST, Secretary

HOLDEN, HOPKINS & STOKES.
IRON
CAST STEEL, NAILS, RAILS, & R.R. SPIKES.
104-106 John St. NEW YORK.

Iron.

NEW YORK.

HAZARD & JONES,
BROKERS.
NEW & OLD RAILS,
FOREIGN AND DOMESTIC
Pig Iron,
Wrought & Cast Scrap Iron, &c.,
212 Pearl St., New York.

J. TREVITT PIKE,
Successor to W. H. Petit & Pike.
72 Wall Street, N. Y.
RAILWAY, SCRAP AND PIG IRON.
Post Office Box, 5565.

JAMES WILLIAMSON & CO.,
SCOTCH AND AMERICAN
PIG IRON,
No. 69 Wall St., New York.

B. F. JUDSON,
SCOTCH AND AMERICAN
PIG IRON,
Wrought and Cast Scrap Iron.
457 and 459 WATER STREET,
And 235 SOUTH STREET, near Pike,
NEW YORK.

JOHN W. QUINCY,
98 William Street, New York
Dealer in
Anthracite & Charcoal Pig Irons,
OLD SCRAP and CUT NAILS.
Gibbs' Patent Lock Nut and Washer, and Fish Plates for Rail Roads.

BOONTON
CUT NAILS,
HOT PRESSED NUTS,
Machine Forged Bolts,
Washers.
Fuller, Lord & Co.,
BOONTON IRON WORKS,
139 Greenwich Street. New York.

Swedish Iron.
A Variety of Brands, including
UB HP NB 03
BARS suitable for Steel of all grades, Wire, Shovels, Hoes, Scythes, Carriage Bolts, Nail Rods, Tacks, &c.
CHARCOAL PIG IRON for Bessemer and Car Wheels.
MUCK BARS for Steel Smelting and Re-rolling.
SCRAP or BAR ENDS.
Direct Agency for N. M. HÖGLUND, of Stockholm, represented in the United States by
NILS MITANDER,
69 William St., New York.
ABBOTT & HOWARD, Boston, Mass. AGENTS: ALBERT POTTS, Philadelphia, Pa.

DANIEL W. RICHARDS & CO.,
Importers of and Dealers in
SCRAP IRON,
Pig Iron,
OLD METALS.
YARDS:
88 to 104 Mangin St., 71 to 79 Tompkins St., Foot of Stanton St., E. R., NEW YORK.
OFFICES.
90 & 92 Mangin Street, 178 Pearl Street, 30 The Albany, Liverpool, England. New York.

The Corrugated Metal Co.
D. F. Towner, Prest. & Trs. East Berlin, Ct. G. W. Cook, Secy. N. C. North, Supt.
Manufacturers of
PATENT CORRUGATED FIRE-PROOF SHUTTERS, of Superior Quality.
The best shutters known for protection against fire.
New York Office, 44 Centre St., NOYES & WINES, Agents.

P. W. GALLAUDET.
Banker and Note Broker,
Nos. 3 and 5 Wall Street,
NEW YORK.
HARDWARE, METAL, IRON, RUBBER, SHOE, PAPER AND PAPER-HANGINGS, LUMBER, COAL AND RAILROAD PAPER WANTED.
ADVANCES MADE ON BUSINESS PAPER AND OTHER SECURITIES.

T. B. CODDINGTON & CO.,
25 & 27 Cliff St., New York.
Bar Iron, Sheet Iron, &c
Of every description

Iron.

NEW YORK.

HARRISON & GILLOON
IRON AND METAL DEALERS,
558, 560, 562 WATER ST., and 302, 304, 306 CHERRY ST.,
NEW YORK,
have on hand, and offer for sale, the following:
Scotch and American Pig Iron, Wrought, Cast and Machinery Scrap Iron, Car-Wheels, Axles and Heavy Wrought Iron; also old Copper, Composition, Brass, Lead, Pewter, Zinc, &c.

JOHN F. PFEFFERLE,
Dealer in all kinds of
SCRAP IRON AND OLD METALS,
BAR AND PIG IRON.
Also, New and Second-Hand Anchors, Chains and Machinery of all descriptions.
Nos. 531 & 533 Water St., N. Y.

PETTEE & MANN,
Dealers in
Ulster, English Refined & Common
BAR IRON,
Scotch and American Pig Iron, Wrought & Cast Scrap Iron, &c., &c.,
228 & 229 South and 449 & 451 Water Sts., N. Y.
The highest price paid for Wrought and Cast Scrap Iron. Storage for Pig, Bar and Railroad Iron taken at the lowest rates.
D. L. PETTEE. G. A. MANN.

OXFORD IRON CO.,
Cut Nails and Spikes,
R. R. Spikes, Splice Bars and Nuts and Bolts,
81, 83 & 85 Washington, near Rector St, N. Y.
COLLIER & SCRANTON, Agents.

DAVID CARPENTER,
Manufacturer of
HOT PRESSED NUTS,
And Dealer in
All kinds of Refined Bar & Horse Shoe Iron,
402 Water Street, New York.

U. O. CRANE.
BROKER IN
PIG IRON & METALS,
104 John St. New York.

H. L. GREGG & CO.,
Ship Brokers & Commission Merchants,
Importers of
Old Iron, Metals and Rags.
Freight engagements made to all parts of the world. Marine insurance effected in reliable offices.
108 Walnut St., Phila.

THE SPRINGFIELD IRON COMP'Y,
SPRINGFIELD, ILLINOIS,
Is now ready to receive orders for the manufacture of
IRON RAILS,
Of a quality second to none.
Capacity of Works, 25,000 tons per annum.
Chas. Ridgely, Prest. J. W. Bunn, Vice Prest
George M. Brinkerhoff, Secy
E. A. Richardson, Supt.
Agent in New York,
GEORGE T. M. DAVIS, 47 Exchange Place.

BURDEN'S
HORSE SHOES.
"Burden Best"
Iron.
Boiler Rivets.
Burden Iron Works, H. Burden & Sons,
Troy, N. Y.
Established in 1849.

THE
Jackson & Woodin Mfg. Co.
Successors to JACKSON & WOODIN,
Manufacturers of
Car Wheels and Cars,
BERWICK,
COLUMBIA, CO., PA.

Wrought Iron Buildings, Corrugated Iron Bridges, Roofs, Shutters, Doors, Flooring, &c. Corrugated Sheets of all sizes manufactured by Moseley Iron Bridge & Roof Co., No. 5 Dey St., N. Y.

Iron.

PITTSBURGH.

Pittsburgh Foundry.
A. GARRISON & CO.,
Manufacturers of
CHILLED AND SAND
ROLLS,
Of acknowledged superior quality, at the lowest current prices.
Ore and Clay Crushers, and Rolling Mill Castings,
of every description.
Office and Warehouse, 209 Liberty Street,
PITTSBURGH, PA.

PENNSYLVANIA IRON WORKS.
EVERSON, GRAFF & MACRUM.
Pittsburgh, Pa.,
Manufacturers of every description of
Bar, Sheet and Small Iron,
Make a specialty in
Fine and Common Sheet Iron.

W. P. TOWNSEND & CO.,
Manufacturers of
WIRE and
Black and Tinned Rivets
OF CHOICEST CHARCOAL IRON.
Rivets any diameter up to 7-16inch and ANY LENGTH required.
19 & 21 Market St., PITTSBURGH PA.

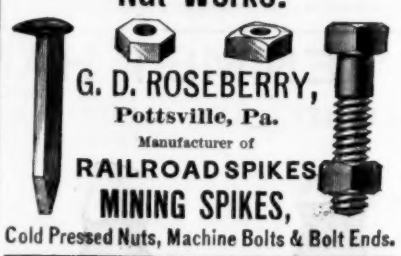
Boston Rolling Mills
Manufacture extra quality small Rods, from best selected Scrap Iron.
Swedish and Norway Shapes,
NAIL and WIRE RODS.
Also HORSE SHOE IRON.
BOSTON ROLLING MILLS,
W. R. ELLIS, Treasurer.
Office, 17 Batterymarch St., Boston.

"PEMBROKE"
Round, Square & Flat Iron.
"FRANCONIA" Shafting & Bar Iron.
Extra quality when great strain or superior finish is required. Also, Irons for ordinary work, like the "ENGLISH REFINED."
WM. E. COFFIN & CO.,
No. 8 Oliver Street, Boston.
New York Agents,
JEVONS STROUD & CO., 104 John St., N. Y.

PACKARD, GOFF & CO.
Youngstown, O.
Manufacturers of
Merchant Bar Iron.
Mills at Hubbard, O.; also Jobbers in
Nails, Nuts, Washers & Carriage Bolts.

Bonnell, Botsford & Co.,
Iron, Nails & Spikes.
YOUNGSTOWN, OHIO.

ALTHOUSE & UMBERGER,
Commission Merchants
For the exclusive sale of
PIG IRON,
341 Walnut St., Phila.

Pottsville Spike, Bolt and Nut Works.

G. D. ROSEBERRY,
Pottsville, Pa.
Manufacturer of
RAILROAD SPIKES
MINING SPIKES,
Cold Pressed Nuts, Machine Bolts & Bolt Ends.

Clement & Hawkes Mfg. Co.,
Manufacturers of
SHOVELS,
Planters' Hoes, Trowels and Machinery,
Northampton, Mass.
Send for Circular and Price List.

Tubal Cain Metal Works,
1320 Callowhill Street, Philadelphia.
Du Plaine & Co.,
BRASS CASTINGS
for Rolling Mills, Machine, Ship and Car Work.
Work and metal warranted as represented.

FLUOR SPAR
As a flux for foundrymen and iron and steel works Fine ground and No 1 lump in barrels, or in bulk, as mined. PORTER & STENTON,
Sole Agents Mineral City Mining and Smelting Co.,
7 Public Landing, Cincinnati, O.
Send for a circular.
Orders promptly attended to by our New York Agent,
W. A. STAGG, 68 Broadway.

New Patents.

We take from the records of the patent office at Washington the following specifications of certain patents lately issued, which will be found interesting:

IMPROVEMENT IN BLAST FURNACE CHARGING APPARATUS.

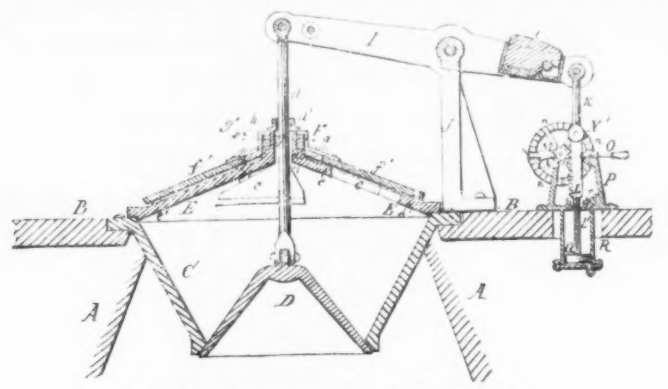
Specification forming part of Letters Patent No. 147,808, dated February 24, 1874, issued to Peter L. Weimar, of Lebanon, Pa.:

The drawing is a plan view of improvements applied to a smelting furnace.

The invention consists in improving the well known air or gas lock bell and hopper charging device used in filling or charging iron smelting furnaces, in the following manner: First, in the combination with the crown, or top, of the well known gas lock bell and hopper charging device, which has charging passages through it, of a revolving plate constructed with a series of separated wings, or a perforated registering plate, which serves to cover the said passages, said wings or solid portions of the plate being united together in a central collar, or eye, by which they are fitted in position upon the top of the hopper. By this construction great simplicity is secured, and the apertures of the hopper can all be closed or opened at once very quickly, and while all the weight is sustained by the furnace top; and, further, the charging passages can be opened to their full capacity without any obstruction from over-hanging hinged wings or doors being experienced. Second, in the combination of hinged flap portions with the revolving collar, or eye, of the covering plate, whereby the advantages of the revolving cover are secured, and the further advantage of having the flap covers to yield or rise whenever an undue pressure or an explosion occurs below the crown, or cover, and the furnace is endangered thereby, is obtained. Third, constructing the crown, or top, with narrow circular ridges and radial ribs on its outer surface, and also with an extended hollow tube, and fitting the said revolving cover upon centralizing bearing washers of the said hub, by means of a hollow capping collar, all in such manner that the cover is suspended and can be moved around with a small amount of force, and at the same time but little friction will be experienced. Fourth, in the combination of a rack and pinion and a speed controlling or regulating device with the loaded beam and the bell and hopper charging device of a smelting furnace. Fifth, in the combination of a hand-wheel, with stop-notches on its face, a stop-lever, a rack and pinion, a loaded beam, and a bell and hopper.

A is intended to represent the walls of an ordinary smelting furnace; B, its annular capping plate; C, the flaring charging hopper; D, the bell or conical sealing valve of said hopper; *d*, the connecting and suspending rod of the bell; and I, the loaded walking beam, to which said rod is hung. The bell C is covered with an arching crown or top, E, in which charging passages *e* are formed. This crown has circular and radial ribs e^1 and a shouldered hub, e^2, formed upon it, as shown. F is a revolving cover, consisting of a central capping collar, *h*, and doors f^1, and a handle by which to turn it. The collar of this cover forms, with the shouldered hub, when the former is fitted around the latter, a chamber, g', and into this chamber supporting or suspending washers *g*, which may be slightly springy, are arranged. These washers serve to center the cover with respect to the crown, and, when worn, can be readily replaced at small expense. The collar of the cover rests upon the washers, and by this means the covers and collar are barely allowed to come in contact with the ribbed surface of the crown E of the hopper; and, in case there is too much bearing upon the crown, a thin washer may be interposed to ease the cover slightly. The collar of the cover is fitted around the hub and washers loose enough to be revolved with small power, and as there is but little contact between the covers and the top of the hopper but little fraction will be experienced. There is a hinged flap or door, f^1, to each passage into the hopper, and there is also a blank supporting surface between each pair of the hopper passages for the respective flaps to rest upon when the hopper passages are open. The hole in the hub *e* is made large enough to allow ample play to the suspension rod *d* of the bell D, but is closed at the top by a movable collar, d', which is nicely fitted on the rod *d*, and easily yields to all the motions of the said rod, while, by its own weight, it keeps the hole h' continually closed, with its lower surface in contact with the collar and hub. The walking beam I has its support upon the standard J, fastened to the capping plate B, and the weight of the bell D and the rod *d* is overbalanced at the other end of the lever I by the weight, *i*, and, by this loaded end, this beam is connected to a vertical rack, L, by a connecting rod, K. The rack L gears with a pinion, which is on a shaft, N, which has a fly-wheel, N', on its outer end. The said fly wheel is provided with notches *n* on one of its faces, and into these notches a stop-lever, O, is made to catch, when desired, to stop the motion of the beam. This stop-lever is fastened to the standard P, which supports shaft N of the pinion M and fly-wheel N'. The rack, if desired, may be extended down in form of a piston rod, L'. The piston rod L' operates a piston, Q, and the said rod and piston are fitted to a cylinder, R, provided at the top and bottom with air cocks *r*, to regulate the entrance and exit of air, which may be used to form a cushion to prevent violent shocks or concussions in the operation of the heavy bell during the operation of charging the furnace. Instead of this air cushion, a friction brake may be used on the fly-wheel.

When the furnace is to be charged, the hopper C, which is closed above and below, is opened by turning the cover flaps f^1 aside by the aid of the handle. The charge is then thrown, through the exposed openings *e*, into the hopper C and on the bell D. The openings *e* are then closed by turning the cover flaps *f* backward. The weight of the charge, with the bell, overcomes the loaded end of the beam, and descends with its load, if the stop lever O is released from its notch of the wheel N, to which it is engaged. The charge sliding off the bell as soon as the opening between it and the hopper C permits has the effect of greatly moderating the acceleration of the descent of the bell, which, however, may be still further reduced by partly or wholly closing the upper cock, *r*, on the cylinder, R, and thereby confining the air, and effecting, by its resistance to the ascending piston, a very gradual termination of the said descent of the bell with its charge. The momentum of the descending bell being spent, the weight, *i*, tends to bring the bell, D, up again, and in this it may be assisted by the operator with a start of the wheel, N, backward. It is desirable to have these movements performed quickly. When the bell is nearly closing the hopper, the acceleration of its motion is counteracted by the compressed air in the lower part of the cylinder, R, which, by means of the air cock, *r*, may be so regulated as to cause the bell to close the hopper almost inaudibly. By opening the hopper, C, from above, it is immediately filled with atmospheric air, which, at the opening below, comes in contact with the gases of the furnace, and often forms explosive combinations, which would instantly ignite and burst the furnace if the cover flaps, f^1, were not made to yield easily to the pressure, and thus serve as safety valves.



IMPROVED BLAST FURNACE CHARGING APPARATUS.

When the openings, *e*, are again exposed for another charge, the gases in the hopper pass therefrom in a harmless state of finished combustion, without flame or great heat, while the furnaces of the present construction on that occasion always emit a towering column of flame and smoke, and very perceptibly indicate the great waste of useful gases and other matter, which delays and otherwise injures the smelting operation. It is sometimes desirable to open the bell valve, and hold it open, and, on account of this, the rack and pinion, fly-wheel with handle, and the rocking lever are provided.

Claim—1. The combination, with the bell and hopper of a furnace which is inclosed by a perforated crown, of a revolving cover consisting of a series of wings or a perforated plate.

2. The combination of hinged flaps with the revolving capping collar of the cover plate of the bell crown and hopper of a furnace.

3. The perforated crown of the hopper, constructed with ribs and a central hub, in combination with the revolving cover, having an annular capping collar, and with the centering and suspending washers.

4. The combination of the rack and pinion, stop lever, notched fly-wheel, loaded beam, and bell and hopper.

5. The air piston, with regulating cocks, combined with the rack and pinion, fly-wheel, loaded beam and bell and hopper.

A "Dicey twin ship" is now being built on the Thames by the Thames Iron Works and Shipbuilding Company, under the special survey of Lloyd's, and is so far advanced in construction that she will be launched in April and ready for the service in June. The vessel is 200 feet long, with an extreme breadth of 60 feet, with the small draught of water of 6 feet, so that she can enter the ports on both sides of the Channel at all times of the tide. She will afford accommodation for upward of 600 passengers, with first and second-class saloons, ladies' and private cabins, and a sufficiency of closets; and over the saloons a fine promenade is arranged. Excellent refreshment rooms are provided, and the comfort of the passengers is in every way studied, so as to insure the success of the undertaking.

It is known that steel, when quickly cooled after heating, assumes more or less hardness and brittleness, the color, texture and density of the material being altered. As to the causes of difference between hardened and unhardened steel, there are merely conjectures on the subject. At a recent meeting of the Berlin Academy of Sciences, one of the secretaries, Dr. Du Bois Reymond, announced that a prize of £40 would be awarded in July, 1876, to any one who would best solve the problem, by experiment, whether the causes referred to were physical or chemical, or both. Accurate comparative analyses are required, especially of the relative quantities of carbon in the free and combined state, and also observations of the physical qualities of the materials. The memoir may be written in German, French, Latin or English, and is to be sent to the Academy—with sealed note and motto—before the 1st of March, 1876.

Locks and Locksmiths of Ancient and Modern Times.

A curious illustration, tending to bear out the truth of the dictum of the wisest of kings, that "There is nothing new under the sun," is the fact that it has lately been disclosed that locks with "sliders" and "tumblers" have, for many centuries been made in China, on the identical principles which have been "reinvented," so to speak, by modern English patentees. It is well known, also, that the Egyptians invented, and used in their houses a contrivance embodying all the principles of the modern tumbler lock, and which probably presented as serious an obstacle to the felonious attempts of the Theban, or Alexandrian burglar, as the late devices of Brahmah, Cotterill, Hobbs, or Yale do to those of the modern house-breaker.

If the time-honored maxim, "Love laughs at locksmiths," has, like the Spanish proverb, "Held good in every age and clime," the muscles of Cupid's chubby face must have been relaxed toward that particular class of craftsmen for a period not far short of forty centuries. The Egyptian locksmith was probably the first to excite the sly god's mirth. Next in order came the fabricator of the "doore fastenings of dyverse colours, made of brass and ivory," of ancient Rome, followed by the maker of the still more elaborate *serrure de Tabernacle*, in the mediæval age, immortalized in early Christian missals. The locksmith of the Celestial Empire then began to make his "strange instruments having wooden slides," the architecture of which was peculiarly adapted to the summer-house in which the fair heroine of the "willow pattern" was kept in durance vile. Then the locksmith began to flourish in England; and, by the time of good Queen Bess, the operations of the craft were so fully established in the towns of Staffordshire—to wit, Wolverhampton, Willenhall, and Wednesbury—that Cupid must have indulged in peals of laughter worthy of the immortal Comus; and, after all the enterprise of later years, with its levers, and wards, "detectors," and master keys, the Muse of Love is still able to chant, even in the hearing of Hobbs and Chub:

> "My father he has locked the door,
> My mother keeps the key,
> But neither bolts nor bars can part
> My own true love and me."

The Egyptian lock, the rude carvings of which are said to have embellished the walls of ancient Karnaks' Temple, and the Herculaneum, is thus described by Mr. E. Beckett Denison, Q. C.: "In this lock three pins fall into a similar number of cavities in the bolt, and so hold it fast; they are raised again by putting in the key through the large key-hole in the bolt, and raising it a little, so that the locking pins are pushed by the key out of the way of the bolt. The security afforded by this lock is very small, as it is easy to find the places of the pins by pushing in a piece of wood covered with clay or tallow, on which the holes will leave their impress, and the depth can easily be ascertained by trial." These locks were first introduced into England by the merchants of Phœnicia, who gave them to the Cornish miners in exchange for tin. Strangely enough, locks of similar construction, but evidently "home-made," are still to be found on the doors of many of the peasantry in Cornwall and Devon.

The locks of ancient Greece and Rome are quaintly described by the philosophers and poets of the time. Aratus compares the constellation Cassiopeia to a Roman key, "having a curved stem" and a handle "shaped like the south stars of the group." Curved stems were usually in the keys of that age, and the poet Ariston applies to one of those articles, the epithet, "deeply bent." Eustathius says that those ancient keys resembled sickles, and were sometimes so large as to be carried on their shoulders, as reapers bear their sickles to the harvest field. This statement is confirmed by Callimachus in his Hymn to Ceres, where he represents the priestess of Nicippe carrying a key on her shoulders. Homer's allusion to the lock and key on the wardrobe of the fair Penelope will probably be better known. The passage is thus rendered by Pope:

> "A brazen key she held, the handle turned,
> With steel and polished ivory adorned.
> The bolt, obedient to the silken string,
> Forsakes the staple as she pulls the ring,
> The wards responded to the key, turned round,
> The bars fly back, the flying valves resound,
> Loud as a bull, makes hill and valley ring,
> So roared the lock when it released the spring."

Eustathius, a Greek commentator on Homer, who flourished in the twelfth century, says that the key here referred to was very ancient, and was known as "the serpent key," from its resemblance of form. It was in use before the siege of Troy, although some writers persist in ascribing its invention to Theodore of Samos.

The mediæval locks were, perhaps, among the most elaborate and artistic specimens of those articles ever produced. Beads, scrolls, or floral wreaths, exquisitely graven in steel, lined the edges. Angel forms, similarly wrought, surmounted the escutcheon, like the twin guardians of the fairies' grotto in the pantomime; while the surface of the lock presents as great a variety of leaves and flowers, all chased with the utmost skill, as Eugene Kimmel's beautiful bouquet. These locks were mostly found on the doors of the ancient Continental cathedrals, or on the magnificent cabinets for which the middle ages were so famous, and Mr. Fairholt assures us that in either case the lock constituted no mean part of the profuse decoration of the door to which it was affixed. The skill of Continental locksmiths, after a considerable slumber, was revived in the seventeenth century, in the person of M. Reignier, a French artisan, who acquired great fame as the maker of "letter locks," with which the couriers despatch boxes were secured. A Dutch writer, Von Euse, passing over the claims of his own countrymen, ascribes to M. Reignier the invention of the letter lock, which is, in reality, of Dutch origin, and was made a century before this French Chubb saw the light. An allusion to it is made in Beaumont's and Fletcher's play, 'The Noble Gentleman," printed as early as the year 1615, which completely sets aside M. Reignier's claim to the invention:

> "A cap case for your linen and your plate,
> With a strange lock that opens with A. M. E. N;"

and Carew, in some verses written five years later, has this reference:

> "As doth a lock that goes
> With letters, for till every one be known
> The lock's as fast as though you had found none."

The latter quotation partly explains the construction of the letter lock, with which Mr. Reignier's name will always be connected as their most famous manufacturer. The letters of the alphabet were engraved on four parallel revolving rings, which, by pre-arrangement on the part of the owner, were made to spell a certain word, or number of words, before the lock could be opened. If even the owner chanced to forget the "open sesame" on which he had determined, like the luckless youth in the story of "Ali Baba," the door would remain closed against him, till the magic watchword was recalled.

Some of the very oldest locks made by Chinese workmen were constructed almost entirely of wood, and adorned with grotesque carvings of "celestial scenes," such as those with which modern tea caddies have made us so familiar.

Tradition assures us that locks were made in England as early as the reign of Alfred the Great, and some go so far as to say that the ingenious monarch himself, like Louis XVI, of France, was an amateur fabricator of those articles. It is true, no doubt, that even at so remote a period ingenious blacksmiths were wont to contruct clumsy locks and keys, together with other articles of domestic use, when occasion demanded; but lock making was not recognized as a distinct craft in England until the fourteenth century; and two hundred years followed before it assumed proportions at all equal to those attained in earlier times on the Continent, in China, and in ancient Egypt. The locks produced in England in the fifteenth century were massive and strong, but chiefly of simple construction. Almost the only specimen now remaining is to be found on the parish church of Snodland, in Kent. In the sixteenth century commenced the display of ingenuity on the part of English locksmiths which has been uninterruptedly maintained since that time, and which forms an interesting chapter in the curiosities of industry. During Queen Elizabeth's reign, the bows of keys were usually ornamented by the insertion of a cross, and the locks were frequently made of metal, sometimes imbedded in oak cases. Latch keys—the terror of Mistress Caudle—also came into use about this period. Locks were for the first time made with alarm bells and chimes during this period. Some of these bells rang so loudly, in case of any unlawful tampering with the lock, as to arouse the whole street. Bells with chimes warned the inmates and alarmed the burglar in a much more soothing way. No sooner was the skeleton key of the intruder applied to the lock than the latter began to chime such plaintive airs as

> "Home, sweet home,
> Be it ever so humble,
> There's no place like home;"

a sentiment with which the chagrined house breaker would doubtless concur as he took his precipitate flight.

The modern lock is a far more effective and economic affair than its old-fashioned predecessor. The vastly increased facilities for manufacture and the decrease in value of the raw material, enable the lock makers of to-day to turn out locks of the most admirable workmanship and approved pattern at a very low figure. As few branches of industry afford a wider scope for the exercise of ingenuity and skill, so there are few in which those qualities have been more signally and usefully displayed.

In no country have locks been brought to greater perfection than in this. Our safe and bank burglar proof locks would almost seem to have reached perfection, so strong, so ingenious, and yet so simple are they to those who understand the secret of their working, and yet every day brings out some new contrivance of still greater security and strength. The well known fecundity of native inventive genius has, moreover, conspicuously shown itself in the infinite variety of these contrivances produced here. Among the multiplicity of patterns, it would be strange indeed, if a few were not more elaborate than effective, yet, upon the whole, our lock makers and inventors have every reason to be proud of the result of their labors; nor, if the number of failures had been in the ratio of one for every perfect lock produced, could we regret the exercise of competitive ingenuity in a branch of industry which contributes so essentially to the security of property, and even life itself.

Iron.

CLEVELAND.

CLEVELAND ROLLING MILL CO.,

MANUFACTURERS OF

BESSEMER STEEL RAILS,

Steel Plates and Forgings, Railroad Iron, Merchant Bar, Beams, Girders, Splices, Bolts, Spikes, &c., &c.

Office, Nos. 99 and 101 Water St., **CLEVELAND, O.**

S. Stone, Pres. H. Chisholm, V. P. & Gen. Supt.
E. S. Page, Sec'y.

Cleveland, Brown & Co.

IMPORTERS, MANUFACTURER AND DEALERS IN

IRON AND STEEL,

HORSE SHOES, HORSE NAILS,
NORWAY NAIL RODS,
NAILS, SPIKES,
"Standard Taper" Axles & Swedes Iron,
WINDOW GLASS,
Wrought Iron Pipe and Boiler Tubes
Chains, Rivets, Nuts, Washers, and Heavy Hardware Generally.
25, 27, 29 & 31 Merwin Street,
CLEVELAND, OHIO.

OLD DOMINION

Iron and Nail Works Company,
RICHMOND, VA.,
R. E. BLANKENSHIP, Commercial Agent.

Manufacture
NAILS AND BAR IRON,
Bands, Scrolls, Horse Shoe Bars Nut and Rivet Iron, Spike Rods, Shafting, Bridge Bolts, Ovals, Half Ovals, Half Rounds, &c.

NEW HAVEN Rolling Mill Comp'y

Manufacturers of Merchant, Horse Shoe, and extra quality Iron. Guaranteed to stand specified tests. Special orders taken for common Iron.
New Haven, CONN.

J. TREVITT PIKE,

Successor to W. H. Petit & Pike.
72 Wall Street, N. Y.

RAILWAY, SCRAP AND
PIG IRON.

Established 1836.

Sidney Shepard & Co.,

BUFFALO, N. Y.

Our Specialties

For which we Invite Correspondence & Solicit Orders.

Tinmen's Tools and Machines.
Ausable Horse Nails.
W. D. Wood & Co.'s Sheet Iron.
Patent American Russia Iron.
Galvanized Sheet Iron.
Snell's Augers and Bits.
Snell's Boring Machines.
Tubular Lanterns.
Shepard's Blind Hinges.
Iron Tea, Table & Basting Spoons.
Turn Table Imp'd Apple Parers.
Peerless Egg Beaters.
Brass Kettles.
Enameled Kettles.
Rubber Belting, Packing & Hose.
Berea Grind Stones.
Yager's Soldering Salts.
Cast Hollow Ware.
Sheet and Bolt Copper.
Copper Bottoms.
Planished Copper.
Yaw's Cow Bells.
Tinned and Black Rivets.
American Screw Co.'s Screws.
Manila Rope.
Bessemer Steel Spring Wire.
Novelty Clothes Wringers.
Stove Boards.
"Champion" Ice Cream Freezers.
Tea Trays.
Chesapeake Cut Nails.
Iron Wire.
Wire Dish Covers.
Stove Ornaments.
American Coffee & Spice Mills.
Perforated Tin.
Maischoss Bros. C. S. Files.
Gem Stove Polish.
National Cast Butts.
Charcoal Sad Irons.
Howard Parallel Vises.
U. S. Gov. White Lead.

Prices Reduced!!!

OHIO TOOL CO.,

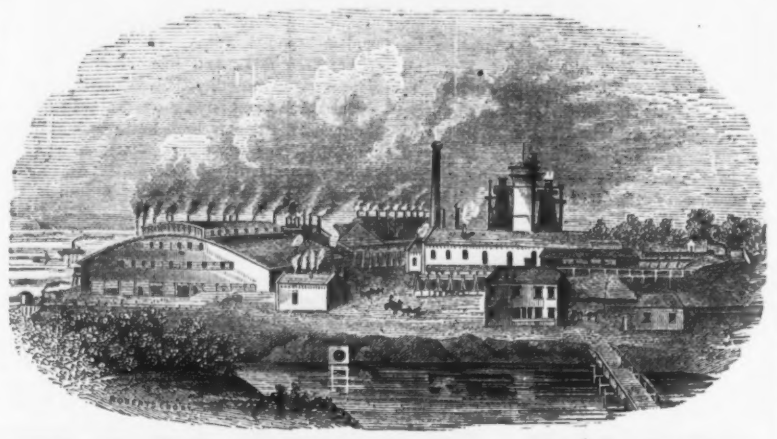
Planes and Plane Irons.

OHIO TOOL CO., Columbus, O.
J. CLARK WILSON & CO., Agents,
81 Beekman St., N. Y.

Iron.

MILWAUKEE IRON CO.,

MANUFACTURERS OF



RAILROAD IRON

of Unsurpassed Excellence.

Capacity of Works, 45,000 Tons of Rails per Annum.

E. B. WARD, Prest. ALEX. MITCHELL, Treas. J. J. HAGERMAN, Secy. & Gen. Supt.
WILLIAM F. DURFEE, General Superintendent.

MILWAUKEE, WIS.

MILES ALARM TILL CO.,

The Oldest, Largest and only Incorporated Alarm Till Co. in the World.

"TRADE MARK."

Send for Catalogue, Price List and Circulars.

Providence, R. I.

Wells W. Leggett. Leverett L. Leggett

LEGGETT & LEGGETT,

Patent Attorneys and Solicitors of Patents.

WASHINGTON, D. C.,

Give special attention to securing American and Foreign Patents for Inventors, Reissues and Extensions of Patents; also, to the taking up and prosecuting of Rejected Cases, Interferences, Infringements, Appeals, etc

We prosecute cases before the Patent Office & in the different Courts

Correspondence promptly and carefully attended to.

Artistic & Enduring

MONUMENTS,

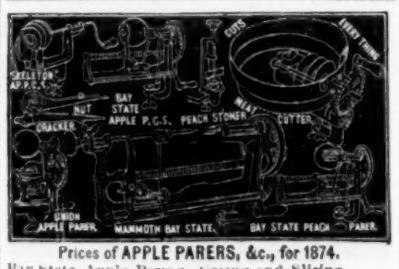
IN GRANITE AND BRONZE

Designs remitted by Mail.

National Fine Art Foundry
218 East 25th Street, New York.

Schweitzer Mfg. Co.,

57 Reade St., N. Y.
IMPORTERS & JOBBERS.



Prices of APPLE PARERS, &c., for 1874.

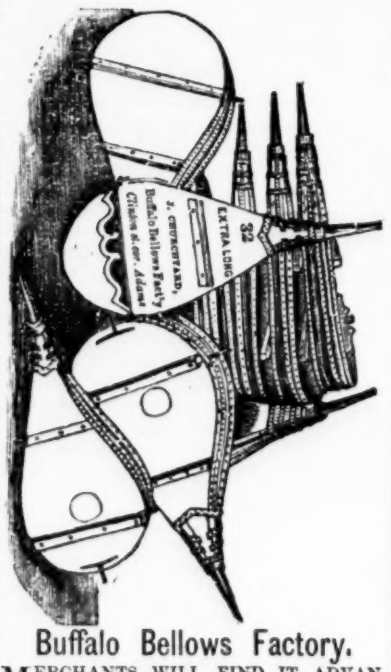
Bay State Apple Paring, Coring and Slicing Machines (does all at once)	₱ doz.	$15 00
Skeleton Apple Paring, Coring and Slicing Machines (does all at once)	₱ doz.	8 50
Union Improved Apple Parers	"	8 50
Bay State Peach Parers	"	12 00
Peach Stoner and Halver	"	7 00
Meat Cutters	₱ doz.	$30 00 and $72 00

"Skeleton" and "Union" in 50 doz. lots, ₱ doz. $8 00. Other kinds included at 10 per cent. discount from list. Terms, 30 days, or 5 per cent. discount if sight draft be made on shipment.

Manufactured by

D. H. WHITTEMORE,
Worcester, Mass.

J. Clark Wilson, & Co., New York, and Wm. H. Cole, Baltimore, Agents.



Buffalo Bellows Factory.

MERCHANTS WILL FIND IT ADVANTAGEOUS to buy from me, as I sell low, and my location enables me to ship at very low rates. No charge for cartage or other incidental expenses, my quotation being the whole cost to the purchaser, except the freight from Buffalo to his location. Please send your orders to

JOSEPH CHURCHYARD,
Clinton cor. Buffalo, N. Y.

GEO. W. BRUCE,

No. 1 Platt Street,
Continues to import
Nettlefold & Chamberlain's,
IRON AND BRASS SCREWS, AND WIRE GOODS, RIVETS, &c.,

and assures the trade that his stock, assortment and prices are not equaled by any other parties, whatever their pretentions

NEW YORK, April 1st, 1874.

Iron.

CAST IRON FLANGE PIPES

Of any length or diameter, for Steam Engines, Exhaust Steam, Fire Purposes, Refineries, both Faced and Drilled and Plain. Also,

GAS and WATER PIPES

Of all sizes, with necessary connections for same.
LAMP POSTS, FIRE HYDRANTS, VALVES, &c.

R. A. BRICK & CO., Mfrs., 112 Leonard St., N. Y.

NEW HAVEN ROLLING MILL CO.,

Manufacturers of

HORSE AND MULE SHOES.

NEW HAVEN, CONN.

Jesse W. Starr. Benj. A. Starr Benj. F. Archer.

CAMDEN IRON WORKS

(Established 1824), CAMDEN, N. J.

JESSE W. STARR & SONS,

Engineers, Contractors and Manufacturers of Gas Apparatus.

And all the
Buildings, Tanks, Holders, &c., required for the Manufacture, Purification, and Storage of Gas, and Street Mains Requisite for its Distribution.

Plans, Drawings, and Specifications promptly furnished.

IRON FOUNDERS.

CAST IRON STREET MAINS, for Water and Gas, from One and a Half Inches to FORTY-EIGHT Inches in Diameter.
Stop Valves (all sizes), FIRE HYDRANTS, HEATING PIPES, BRANCHES, BENDS, TEES CASTINGS of any form or size required.

PHILADELPHIA OFFICE. - - 403 WALNUT STREET.

TAYLOR IRON WORKS,

HIGH BRIDGE, N. J.,

On the line of the Central Railroad of New Jersey.

STEEL TIRED WHEELS, made under Sax & Kear's Patent, by which process a crucible steel tire is perfectly welded to a cast iron center.

CAR WHEELS, CAR AXLES,
DRAW HOOKS & FORGINGS.

STANDARD DRAW HOOKS, finished, ready for immediate use, with or without links.

LEWIS H. TAYLOR, President. | JAS. H. WALKER, Secretary.
W. J. TAYLOR, Treas. & Gen. Man. | S. P. RABER, Supt.

New York Office, 93 Liberty St.

ATKINS BROTHERS,

PROPRIETORS OF THE

Pottsville Rolling Mills & Pioneer Furnaces

POTTSVILLE, PENNSYLVANIA.

Having introduced New and Improved Machinery into their Rolling Mills, and manufacturing all their Iron from the ore, and also doing all Machine Work and Repairs in their own shops, they are enabled to produce

RAILROAD IRON

Of uniform quality, unsurpassed for strength and wear, and of any required length.
Address the Proprietors Pottsville, Pa.

The Britannia Ironworks Company, Limited,

Middlesbro' England,

MANUFACTURERS OF

ALL DESCRIPTIONS OF IRON RAILS

Surplus Stocks of Various Sections always on hand.

London Office: W. G. FOSSICK, 6 Laurence Pountney Hill, E. C.

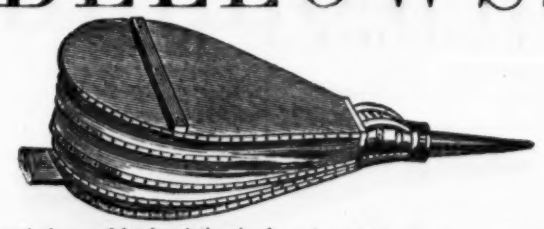
Weekly Output, One Thousand Tons.

NEWCOMB BROS.,

Manufacturers of

Smiths', Moulders' and Hand

BELLOWS.



For further particulars send for descriptive circular and price list.

586 Water St., near Montgomery, N. Y.

Grand Street, East Broadway and South Street Cars cross Montgomery St.

Hand-Cut Files.

Although there can be but little doubt that the more common varieties of files will, in this country at least, be manufactured by machinery very soon, in such quantities as to supply the domestic market, still it may be interesting, in view of the fact that files made by hand are still used very largely in proportion to the others, to inquire into the methods of manufacture—the kinds of steel used, the processes of tempering, hardening, and of cutting the teeth, beside such other matters of interest as may relate to this branch of industry. The files employed in the mechanical arts are almost endless in variety, a fact which is to be accounted for by there being some four, five or six features in every file that admit of choice, in order to adapt the instrument to the several kinds of work for which it is to be used. Most of the names of files express these different qualities, such as taper, blunt and parallel files, single cut, smooth, rough, saw file, half round file, cotter file, &c.

The great majority of files are made considerably taper in their length and to terminate nearly in a point, and are called taper; some others are made nearly parallel, but with the sides somewhat arched or convex, and are known as blunt files; a very few are made with sides almost straight, and are called parallel. There are three forms of teeth made—those of double-cut files, those of floats or single-cut, and those of rasps. The floats and rasps are scarcely used but for wood and soft materials, the double-cut files being used for working on metals and general purposes. When a file is spoken of, a double-cut is always implied, unless a float or rasp is specifically named.

In the American Encyclopedia of Arts and Sciences, published by John Low, New York, in 1807, we find the following quaint description of files and the method of their manufacture:

"Files, in mechanics, are made of iron or forged steel, cut in little furrows with chisels and a mallet, this and that way, and of this or that depth, according to the grain or touch required. After cutting, it must be tempered with a composition of soot very hard and dry, diluted and wrought up with wine, vinegar and salt, the whole being reduced to the consistence of mustard. Tempering the files consists in rubbing them over with this composition and covering them with loam, after which they are put in a charcoal fire, and then taken out; by that time they have acquired a cherry color, which is known by a small rod of the same steel put in along with them. Being taken out of the fire, they are thrown into cold spring water, and when cold they are cleaned with charcoal and a rag, and kept from rust by laying them up in wheat bran. Iron files require more heat than steel ones."

So far the process of making files in 1807.

At present, the pieces of steel or blanks intended for files are forged out of bars of steel that have been either tilted or rolled as nearly as possible to the sections required, so as to leave but little to be done at the forge; the blanks are afterward annealed with great care, so that in neither of the processes the temperature known as the blood red heat may be exceeded. The surfaces of the blanks are then rendered accurate in form and quite clean in surface, either by filing or grinding. When the manufactured files are small the blanks are mostly put into shape by filing, as being the more exact method, and when they are large they are commonly ground on large grindstones as the more expeditious mode, and in some few cases, as in that of those called dead parallel files, the blanks are planed in the planing machine, the object being in every case to make the surface clean and smooth. The blank, before being cut, is slightly greased, that the chisel may slip slightly over it.

The file cutter, when at work, is always seated before a square stake or anvil, and he places the blank straight before him, with the tang toward his person. The ends of the blank are fixed down by two leather straps, or loops, one of which is held fast by each foot. The chisels vary in size and angle of edge, as does also the weight of the hammer used. The object is rather to indent than cut the steel, and consequently one bevel is a little more inclined than the other. The angle of the edge in the larger is about 50°, and in the smaller about 30°. The usual angles for the vertical inclination, in holding the chisel, are reported to be as follows:

For Rough rasps,	15°	beyond	the	perpendicular.
" Rough files,	12°	"	"	"
" Bastard "	10°	"	"	"
" Second-cut files,	7°	"	"	"
" Smooth " "	5°	"	"	"
" Dead Smooth cut files,	4°	"	"	"

The blow of the hammer upon the chisel causes the latter to indent and slightly drive forward the steel, thereby throwing up a small ridge or burr. The chisel is immediately replaced on the blank, and slid from the operator until it encounters the ridge previously thrown up, which arrests the chisel, or prevents it from slipping further along, and thereby determines the succeeding position of the chisel. The heavier the blow the greater the ridge, and the greater the distance from the preceding cut at which the chisel is arrested. The chisel is again struck, the blows being as nearly as possible of uniform strength, and repeated at the rate of about 60 to 80 times a minute, until the entire length has been cut with inclined parallel and equidistant ridges. This is called, among file makers, the first course. The greater proportion of files, however, are double-cut, and have two courses. After the first has been cut the surface is smoothed over by passing a file once or twice along the face of the teeth, and again greased. The second course is then cut at about this same angle of vertical inclination as the first, and at about 5° to 10° from the rectangle horizontally. The blows on the chisel are given less strongly than in the first course, so as barely to reach the bottom of the previous cut, and the burrs being consequently smaller the teeth are somewhat finer in the second course than the first. The teeth all incline toward the point of the file. When it is turned over to be cut on the other side, if the file be flat, a thin plate of pewter is placed between it and the anvil to protect the cut teeth. Triangular and other files require blocks of lead having grooves of the appropriate sections to support the blanks so that the surface may be placed horizontally. Taper files require the teeth to be somewhat finer toward the point to avoid the risk of the blank being weakened, or broken in the act of being cut. For a double cut rectangular file eight courses are required, but eight, ten or more courses may be required to cut one rounded face of a half-round file. For various reasons chisels with concave edges are objectionable, and the rounded face must be cut in sections with the straight chisel, and as the work is light, it is generally performed in the English workshop by boys.

The teeth of rasps are cut with a punch varying in size and shape, and it is requisite that they should not be cut in straight lines, as if they were they would produce furrows on the substances to which they were applied.

In the process of cutting files and rasps almost always become more or less bent, and are straightened out while at the red heat immediately previous to their being hardened and tempered.

Before being hardened the files are drawn through beer grounds, yeast or other sticky matter, and then through common salt mixed with cow's hoof previously roasted and pounded, which serve to protect the delicate teeth of the file from being injured by the direct action of the fire. The compound serves also as an index of the temperature, because on the fusion of the salt the hardening heat is attained. It also lessons the liability of the files to crack or clink by supply carbon to the outside.

After being smeared with this composition the file is gradually heated to a dull red, and then most usually straightened with a leaden hammer on two small blocks, also of lead; the temperature is afterward increased till the salt just fuses, when the file is immediately dipped in water. It is immersed quickly or slowly, vertically or obliquely, according to its form, the mode being adopted for each variety of file which is best calculated to keep it straight. The half-round file is disposed, on being immersed, to become hollow or bowed on the flat side, and this tendency is provided for by curving it while soft in a nearly equal degree in the reverse direction, and by this compulsatory method the hardening process leaves them nearly straight. If in spite of ever precaution the file should get bent in the hardening, it is straightened before it gets quite cold, or else it is partially reheated and subjected to pressure, never to blows. When straightened it is cooled in oil, which saves the teeth from becoming rusty.

To prevent the tangs from fracture they are softened either by being grasped in a pair of heated tongs, or by means of a bath of melted lead in an iron vessel with a perforated cover, through the holes of which the tangs are immersed in the melted lead heated to the proper degree. The tang is afterward cooled in oil, and when the file has been wiped and the teeth brushed clean it is ready for use.

The superiority of the file is found to depend on four points: 1. The primary excellence of the steel. 2. The proper forging and annealing without excess of heat. 3. The correct formation of the teeth; and, 4, the success attained in hardening. There is, perhaps, an equal amount of philosophy and prejudice in the methods adopted by various manufacturers for hardening files; some attach very great importance to the coating or defence, others to the medication of the water, and all to the mode of immersion best calculated to keep it as straight as possible—questions of opinion that it is impossible to generalize. One of the largest importers of files into the American market gravely informed us, not long ago, that the cause of the superiority of the Sheffield files over those manufactured in Birmingham, England, was attributable to some peculiar quality in the water with which Sheffield is supplied, and in which they are tempered and hardened. He said he had known the same qualities of Swedish iron to be used in their manufacture in both cities, and subjected to the same treatment in every particular, while the result was always in favor of the Sheffield file.

Fresh water, at a temperature of 45° Fahr., is generally considered as effective in producing the proper degree of hardness as any fluid at the same or any other temperature, and the salt on the surface of the file acts principally as an antiseptic.

The principal difference between hand and machine-cut files seems to be in the shape of the tooth or cutting surface. The teeth on machine cut files stand, as a general rule, straighter and at a less angle to the surface to be operated upon than those made by hand. The peculiar effect of the file cutters' hammer when striking a solid blow on a chisel held at an angle of 15° to 20,° and the spring of the wrist, is believed to cause the most important difference between the teeth cut by hand and by machinery. Files cut by machinery are generally conceded by file manufacturers who use only hand labor to excel the hand-cut in the regularity of the teeth and evenness of surface, and on all other points, such as steel, shaping, grinding, hardening, etc., there is little or no difference.

A considerable amount of business is done in recutting files, a work that has always been hitherto done by hand. For ordinary work a recut file is as serviceable as a new one, and much cheaper, averaging only about one-half the price. For particular work mechanics always select new files, as they are much straighter and truer than when recut. It is estimated that at present about three-fourths of the files used in the United States are hand-cut, a state of affairs which is likely to be considerably modified before long.

Lake Superior Furnace Items.

The Marquette *Mining Journal* says:

The Frankfort Furnace Company was organized on the 25th ult., by the election of the following directors: Jerome Croul, W. H. Tefft, R. H. Hall, Albert Ives, E. H. Rees, Willard S. Pope, W. C. Colburn. At a meeting of the directors, officers were chosen as follows: Wm. C. Colburn, president; Jerome Croul, vice-president: E. H. Rees, secretary; Thomas S. Christie, treasurer. The amount of capital stock is $200,000. The furnaces of the company are located at Frankfort, Benzie county. The stock of the company is principally owned in Detroit, where their general business office is established.

The Cliffs Furnace, which was blown in on March 14th, is doing excellent work and giving good satisfaction. It has been making fifteen tons per day, and is gradually increasing, having made in the last few days sixteen tons per day.

At the Pioneer Furnace both stacks are in blast, No. 1 being on its twenty-eighth week, and No 2 on its thirty-first. Each stack averages eighteen tons per day.

Mr. Wheaton, the general manager of the Beecher Furnace, in this city, has secured the services of Mr. George Bradley to put in a new hearth and get the stack ready for work. Mr. Bradley superintended the erection of the North Chicago furnaces, and has had twenty-five years' experience in furnace building in the old country. He may, therefore, be supposed to understand his business, and it is to be hoped, after he shall have completed his work, the furnace will be something other than a source of constant anxiety and loss to the owners. The action of Mr. Wheaton in securing the best of skilled labor is in marked contrast to the former management of the concern, and we most cheerfully score one to his credit. We desire most earnestly to see this long mismanaged enterprise put upon a paying basis, and the manager, in securing the services of Mr. Jewell in the mill, and of Mr. Taylor to put the furnace in order, has taken the most important step in the right direction.

The Grace Furnace, in this city, "blowed out" on the 24th ult., having been in blast since the 25th of last June—279 days. She made in that time, notwithstanding some accidents which retarded her work, 9376 tons of iron, two-thirds of which was No. 1 foundry, and balance No. 2, with a small percentage of mill iron. These figures are exclusive of castings made, and which properly should be added to the make of the furnace. The ore used was No. 2 Lake Superior, and it is safe to say that the Grace has used up more rock and turned out more iron in the time stated than any other furnace of the same size in the country. She was doing finely when she stopped, but it was deemed prudent to blow out for repairs, as the unusually large percentage of silica in the rock ore used, together with that in the flux (Escanaba limestone), was rapidly cutting away her hearth, already greatly damaged by an explosion in her damp chamber last year. The amount of Escanaba stone required to flux the ore averaged one ton to the ton of iron made. It is understood the furnace will go into blast again as soon as the necessary repairs are made.

A New Refractory Compound for Furnace Linings.—We are indebted to Mr. J. M. Scribner, of Middleburgh, New York, for some statements in relation to a new mineral compound, which he says he has utilized in an entirely novel way, which may possibly interest our readers. Having lighted on a mine of silica and alumina of remarkable purity, and being aware that these two minerals in combination were indestructible by the blow pipe, the idea presented itself of more closely uniting them by the aid of a mineral of greater adhesiveness and equal power of resistance to heat. White clay was the mineral substance fixed upon as possessing these qualities in the highest degree, and upon experiment it was found to answer the purpose. The constituents, silica, alumina and clay (the two first having been reduced to an impalpable powder) were mixed together in equal proportions and found to combine perfectly. Mr. Scribner informs us that when applied to a stove lining the compound proved to be smoother, harder, and more effectually resistant to fire than ordinary fire brick, and that before a powerful blow-pipe at the steel works at Troy it failed to exhibit the slighest yielding or external change. He suggests the use of the new compound as a substitute for the fire brick for furnace, cupola and stove linings.

The Argentine government having purchased of the London Ordnance Company four 100 pounder steel guns, constructed on the Vavasseur system of steel tube, strengthened by steel hoops shrunk on, the guns are now, by permission of the War Department, being proved at the butts in the government marshes adjoining the Royal Arsenal, Woolwich, in order to test their quality before delivery. They are considered to be very good guns, and have stood the proof well, as also has a smaller one, called a 20 pounder. The large guns weigh four tons each, and they are muzzle-loaders. Instead of being rifled, the bore of the gun is ribbed, and the projectile is grooved to fit the ribs. It is usual for the English government to allow other nations to prove at the practice range the guns they may purchase of private manufacturers in that country.

THE NICHOLSON FILE.

All Nicholson Files are cut with the Patent *Increment Cut*, an invention owned and controled exclusively by us, the file cut in this manner being Patented as a new article of manufacture, and differs from all other machine cut files (all of which have their teeth cut with equal spaces) by being cut with teeth slightly *expanding or increasing in size and space from the point*, thus avoiding the too great regularity of teeth common to all other machine cut files. The tendency of all cutting tools with teeth or cutters placed at regular distances from each other may be illustrated (to the machinist at least) by the fluted reamer—as it is well known that if a round reamer be made with (say 12) teeth whose spaces are equidistant, the hole reamed will *not* be round and smooth, but will approximate to a hexagon in shape. Whereas, if the same number of teeth be made of irregular distances, the hole reamed will be both round and smooth. The same is true of a file, hence the necessity of its having teeth at unequal distances, and to which we have applied the name of Increment Cut File, which possesses all the advantages of hand cut work, and the accuracy and uniformityof machine work. It is now upwards of seven years since this File was introduced to the public, and the demand has increased until our production is undoubtedly treble that of any File manufactory in the country.

We put all files under seven inches in boxes of either one-half or one dozen each. These boxes are neatly arranged, and open on the end, on which the kind is plainly marked with printed labels, acknowledged improvements on the old methods.

The "*Increment File*" is not an experiment, but an established fact, and already has acquired a legitimate demand for upwards of 500 dozen per day. We employ no *regular Travelers*, but our goods may now be found in the hands of the principal jobbers and dealers throughout the country.

Prices and terms will be forwarded on application to

NICHOLSON FILE COMPANY,
Providence, R. I.

1816. *1844.* *1850.* *1868.*
H. F. F. *H. F. F. & SON.* *P. A. F.* *P. A. F. & CO*

PETER A. FRASSE & CO.,

95 Fulton Street, New York,

IMPORTERS OF

Stubs' Steel Wire, Files and Tools,

Grobet Swiss Files,

Extra Quality English Spring Steel Wire,

Nos. 1 to 34.

Steel Wire for Sewing Machine Needles and for other Purposes,

French Cold Rolled Sheet Steel,

Sizes, 22 to 36 Gauge.

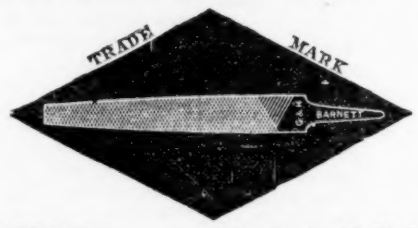
Jewelers', Engravers' & Mechanics' Tools.

The only Agents in the United States for

HUBERT'S CELEBRATED FRENCH EMERY PAPER.
For Hatters' and Machinists' Use.

Black Diamond File Works.

Send for Illustrated Price List.



Send for Illustrated Price List.

G. & H. BARNETT. 39 41 & 43 Richmond St. Phila.

FILES AND RASPS.

XTRA QUALITY,

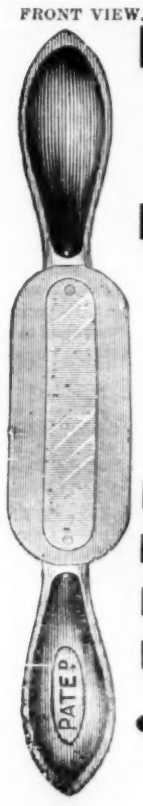
MADE FROM THE BEST

IMPORTED STEEL,

BY THE

Auburn File Works,
AUBURN, N. Y.

FRONT VIEW. BACK VIEW



LLOYD, SUPPLEE & WALTON,

WHOLESALE

HARDWARE HOUSE,

AND

HARDWARE FACTORS.

BATES' MANUFACTURING CO.'S GOODS.

Bonney's Pat. Hollow Augers & Spoke Trimmers.
Bonney's Patent Double-Edged Spoke Shave.
Bonney's Patent Adjustable Gate Hinge.
Bonney's Patent Sash-Fast and Lamp Bracket.

625 Market Street,
PHILADELPHIA.

Cowdin Mfg. Co.,

Manufacturers of the

DIAMOND

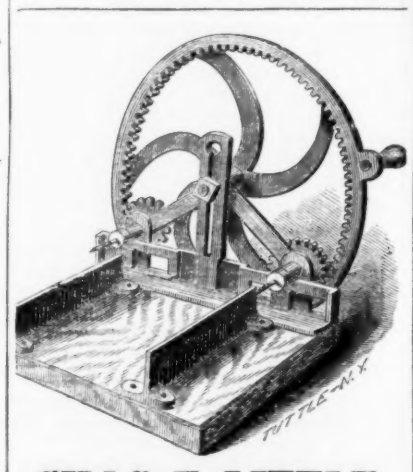
FLINT AND EMERY

PAPER,

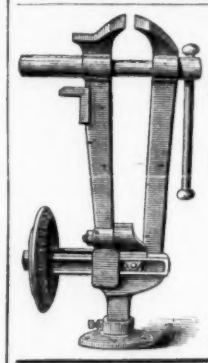
Flint & Emery Cloth.

113 Chambers Street,

P. O. Box 3502. NEW YORK CITY



CHAS. E. LITTLE,
59 Fulton Street, New York.
Agent for
Merchant's Improved
DOWELING MACHINES,
FOR COOPERS' USE.
Price List mailed on application.



Patent Parallel
Machinist's Vise
Manufactured by
Harrisburg Foundry and Machine Company.
Harrisburg, Pa.

☞ *Send for Circular and Price List.*

Chain.

CAIN, GORDON & CO.,
Union Chain & Anchor Works,
1845 Richmond Street.
Office S.W. cor. Queen & Swanson Sts.
PHILADELPHIA.

American Chain Cable Works,
28 Years' Experience in the Business.
KENDRICK & RUNKLE, Trenton, N. J.
Manufacturers of **Cable, Crane, Coal Mine Slope, Car Brake Chains, Traces, Breast, Binding, Cow and Log Chains** of all kinds.
N. B.—The highest grades of Crane Chains a specialty.

New England Chain Works
771 Eddy Street, Providence, R. I.
Manufacture **Iron Chain** of every description.
Mowing Machine, Crane, Break, Draft Chains, &c., &c.
Also, Latest Improved Cotton Can Rings.
THOS. WYATT, Proprietor.

LANE, GALE & CO

SOLE AGENTS
FOR

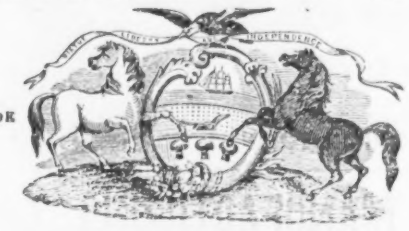
TROY WRO'T BUTT CO.S Wrought Iron Butts (Riveted Pin)..
THE EAGLE SQUARE CO.'S Steel and Iron Squares.
E. F. HURD'S AXES, HATCHETS, ADZES, &c., &c.
G. T. LANE'S PLANTERS' HOES.

AGENTS FOR

BURDEN'S HORSE and MULE SHOES.
E. W. GILMORE'S STRAP and T HINGES.
SCOVIL MFG. CO.'S BRASS BUTTS.
J. M. KING'S STOCKS & DIES.
McCREA'S SHOE THREADS and TWINES.
G. F. ELLS' CURRY, CATTLE and PLANTATION CARDS.
ENAMELED and TIN WARE, &c., &c., &c.

TROY. N. Y.

PENNSYLVANIA FILE WORKS.

TRADE  MARK

McCAFFREY & BROTHER,
Manufacturers of FIRST QUALITY FILES and RASPS ONLY,
Nos. 1732 & 1734 North Fourth Street, Philadelphia, Pa.

Coopers' & Turpentine Tools.

Coopers' Drawing Knives,
Coopers' Adzes and Axes,
Coopers' Frocs,
Stocked Croze and Irons,
Coopers' Jointers,
Trass Hoops, all sizes.
Turpentine Hackers,
Turpentine Shavers,
Turpentine Scrapers,
Turpentine Axes,
Turpentine Dippers,
Hacker Stones and Files.

FOR SALE BY

N. WEED, 37 Chambers St., N. Y.

FERNALD & SISE,

100 Chambers Street, NEW YORK,

HARDWARE MANUFACTURERS' AGENTS,

REPRESENT:

Reading Hardware Co.
Crooke & Co.
Yerkes & Plumb.
Hartje, Wiley & Co.
Vulcan Horse Nail Co.
Walsh & Bro.
Moran & Sons.
Barnes & Deitz.
Nashua Lock Co.
Arcade File Works.
William McNiece.
Langstroth & Crane.
B. Rowland & Co.
A. E. Young.
Underhill Edge Tool Co.
Plumb, Burdict & Barnard.
Hotchkiss, Tuttle & Co.
Klein, Logan & Co.
T. T. Rhodes.
Orleans Scythe Stone Co.

TURNER, SEYMOUR & JUDDS.

MANUFACTURERS, IMPORTERS AND DEALERS IN

Hardware and Upholsterers' Brass Goods.

SOLE AGENTS FOR

L. L. Davis' Patent Levels, Stevens' Calipers and Dividers,
Page's Auxiliary Jaws.

Manufacturers of Judds', Prindle's and Combination Patent Curtain Fixtures, Locks and Curtis Patent Raisin Seeder, Patent Twine Boxes, Picture Nails and Hooks, Escutcheon Pins, Coat and Hat Hooks; also Miscellaneous Iron and Brass Goods.

Small Brass and Iron Castings made to order.
64 Duane Street, NEW YORK.

JAMES C. HAND & CO.

COMMISSION MERCHANTS,

No. 614 & 616 Market Street, **PHILADELPHIA**

AGENTS FOR:

William Penn, Reading and Norristown Pig Iron.
Reading Iron Co.'s (Crescent Brand) Nails, Boiler Flues, &c.
Bar Iron, Plow Steel and Iron, South Easton Iron Wire.
Wm. Jessop & Sons' Steel and Norway Nail Rods.
Barrows, Savery & Co.'s Hollow Ware Castings, &c.
Fisher & Norris' "Eagle" Anvils and Vises.
Washington Mills Emery.
Heavy Hardware, &c., &c.

W. F. SHATTUCK & CO.,

113 Chambers and 95 Reade Street, New York.

MANUFACTURERS OF AMERICAN HARDWARE.

Coes & Taft's Pat. Wrenches.
Axe, Pick, Sledge & Hammer Handles.
Hatchet, Auger, Chisel & File Handles.
Mallets, Pat. Boot Jacks.
Gimlets and Gimlet Bits.
Augers and Auger Bits.
Cocoa Mat Dippers.
Mouse Traps. Wire Seives.
Scale Beams.
Patent Tap Borers.
Tool Chests.
Climax Horse Collars.
Brundage Horse Nails.
Maguire's W't Iron Goods.
Shattuck's Platform Counter Scales.
Yaw's Cow Bells.
Axes, Picks and Hatchets'
Hammers. Crow Bars.
Sad Irons.
Boring Machines.
Cast Iron Hatchets
Coffee Mills.
Star Steel Spoons
Stocks and Dies.

BUSINESS ITEMS.

PENNSYLVANIA.

The Dunbar Furnace, at Uniontown, has been casting from thirty to thirty-five tons of metal per day. In a few days, when another engine will be started, it will average forty tons per day, or about twelve hundred tons per month.

Allfree & Co. have opened an extensive machine shop at Rice's Landing, Greene county.

On the 1st instant the Union Iron Works, Pittsburgh, passed into the possession of Messrs. Wilson, Leggate & Co., who will commence the manufacture of railroad supplies, mainly car axles.

Knapp, Iverson & Co.'s new rolling mill at Scottdale, Westmoreland county, has suspended operations for the present.

The Emaus Furnace, at Emaus, Berks county, was blown in on the 6th inst.

Two new furnaces are to be built at Lyons, by the East Pennsylvania Iron Company.

The Edgar Thomson Bessemer Steel Works, which are located just east of Pittsburgh, are being pushed forward rapidly to completion. The company have already on the premises the engines to be used in driving the machinery, and the blast engines for the converters are ready for delivery. The converters are finished and in readiness for removal. Messrs. Mackintosh, Hemphill & Co. are the manufacturers of the engines, and the converters were made by Messrs. Totten & Co., both of Pittsburgh. The works will be completed as soon as possible.

A heavy boiler plate mill is being constructed by A. Garrison & Co. at their works in Pittsburgh. It is for the Union Iron Works, of Buffalo, N. Y. They are also manufacturing a similar mill for Boston parties. These rolls will be 31 inches in diameter, and are among the largest in use in the United States.

NEW JERSEY.

The Cummings Car Works, at West Bergen, have recently shipped a lot of milk cars for the New Jersey Midland, and an outfit of special cars for a traveling circus.

Watts, Campbell & Co., proprietors of the Passaic Machine Works, at Newark, are building a lathe for C. H. Brown & Co., of Fitchburg, Mass., which will weigh over 30 tons when completed. The swing is 25 feet, and it is designed for the heaviest work. They are also building a large radial drill for the same firm, and a pit lathe for J. A. Roebling's Sons, of Trenton, and a large variety of machinery for Cuba. They have recently sent to Cuba a triple effect vacuum train and strike pan, and a large beam pumping engine, with the accompanying defecators and clarifying pan, the whole weighing over 150 tons and costing over $100,000. Their buildings consist of two foundries, 50x50 and 60x80 feet, respectively, with two cupolas, in which they averaged last year 2½ tons per day; a machine shop, 100x100 feet, two stories; a blacksmith shop, 35x35; and brass foundry, 120x30 feet. Eighty hands are employed on full time.

Work is shortly to be commenced on the Green Pond Railroad, which will be four miles long, from the Green Pond Iron Company's mines in the town of Rockaway, north by east to the New Jersey Midland near Charlottenburg.

MASSACHUSETTS.

A stock company is about to be formed to take the management of Capt. Edwin Richardson's Scythe Works, at South Fitchburgh. It is to have a capital of $100,000, and is to be known as the "Edwin Richardson Scythe Company." During the coming season the company will so enlarge the buildings and manufacturing facilities as to make the capacity for turning out scythes, etc., three times as great as at present.

The Wason Company, at Springfield, has closed contracts for new cars for the Housatonic and Connecticut Western Companies.

The Industrial Iron Works, New Bedford, will be carried on in connection with the boiler works of James C. Bradford.

CONNECTICUT.

The Mowry Axle Company have restored their employes' ante-panic wages.

MAINE.

The Camden Anchor Works, at Camden, were established in 1866, by the present proprietors, H. E. & W. G. Alden. These works cover two acres of ground, contain three large hammers, with other necessary machinery, and give employment to 50 hands. Their product comprises windlass necks, truss-shapes, anchors and chains, etc. Anchors constitute the specialty of the firm, who manufactured the first of large size ever turned out east of Boston.

The Lewistown Machine Company are now giving employment to 180 hands. They manufacture cotton machinery in great variety, making a specialty of the celebrated "Thomas Loom," of which they have the exclusive right to manufacture. Their works cover about five acres of ground. Their machinery is driven by a steam engine of 60 horse-power.

NEW HAMPSHIRE.

The Manchester Locomotive Works, founded in 1854, have a capacity equal to the manufacture of 175 engines a year. Only 320 men are now employed, but the works have a capacity to employ 700. The locomotives made at these works are in use in the West as well as the East.

S. C. Forsaith & Co., Manchester, make a specialty of patent newspaper folding machines, paper cutters, bolts headers, the Palmer power spring hammer, circular saw mills, shingle mills, etc. They employ 50 hands and do a business of $150,000 annually. Their "Abbe" bolt header, a superior machine, turns out from 2500 to 8000 bolts a day, with heads of any desired shape.

ILLINOIS.

At at a meeting of stockholders of the Joliet Iron and Steel Works, April 3, the committee appointed at a previous meeting reported a proposition to be submitted to the stockholders, which is, in general terms, that the creditors be given stock in settlement of claims, and continue the works. Both creditors and stockholders are anxious to have the works resume operation, as there is now a demand for all the iron and steel that can be turned out. The report was adopted, and the meeting adjourned.

A factory has been established at Danville for the manufacture of an iron road wagon, which the inventor has been perfecting for the past two years. The *Commercial* says the wagon is complete and perfect in every respect, elegant in finish, capable of bearing from seven to ten tons, and the wagon itself weighing less than 1200 pounds.

WISCONSIN.

The iron works at Marinette are running their full capacity.

MISSOURI.

The St. Louis Bolt and Iron Company's mill is running extra time on large orders from the Union Pacific and Louisville and Nashville roads.

The Burning Mines.

The Wilkesbarre *Record of the Times* says: The fire at Kidder Slope, of the Empire mines, still burns fiercely, but is not now solid merchantable coal. The heat from the shaft near the top of the slope, from which the ventilator was burned, is strong, a thermometer held over it at the surface soon registering 120 degrees. The shanty erected over the boiler at the top of the slope, to run the fan, was burned some time ago, taking fire from the culm heap on which it was placed. The culm is burning yet, and probably took fire through some connection with the fire in the mine. It can hardly be from spontaneous combustion. The heat from the air shaft, and at points adjacent, where the fire finds vent, indicates the approach to the out crop, and it might easily communicate with the culm, which seems to burn without preparation when its heat is not needed. The rapid extension of the fire inside is through this loose refuse coal and slate, making it difficult to cut off, but of less consequence except from its generation of noxious gasses, which may trouble the miners if not subdued.

THE DIAMOND DRILL.

To reach the mine with steam or water at the point where the fire originated, a hole is to be put down from the surface, and the Pennsylvania Diamond Drill Company has the work in charge under Mr. G. Frisbie, superintendent. The machinery is up, and a pipe some ten or twelve inches in diameter has been driven to the rock, through which the drill is worked. Not being in operation Wednesday a description will not be attempted now. The drill moves with a circular motion, not up and down like one steel bitted which cuts the rock fine, but the diamonds are set in the bottom of a pipe the size of the hole to be bored and grind the way, cutting a core which extends up in the pipe. It is said to be a rapid and effective mode of sinking.

THE FIRE AT BALTIMORE MINES.

Workmen are carting earth to the opening under the rock, south of the old openings, and dumping it down shutes to cars, by which it is taken to the fire to bank it up and smother it.

The fire began at the bottom of the air shaft, about the center of some five to eight acres of the Baltimore mines, long worked out, which fell in last winter, covering steam engines at the bottom of the shaft ninety-five feet from the surface; at first the fire was supposed to be merely the shanty over the stove, which soon went out, but a few days gave evidence that the fire under the boilers had communicated to the refuse lying around, and the shaft served as a ventilator to give it headway. When roused to the danger, work was begun in earnest, but to little purpose. The shaft still burns, but the fire has spread in all directions to the extent of the fall, steam and smoke pouring out at the break in the surface, which has settled from ten to fifteen feet. The earth and rock seem to be burning wherever the fire finds vent, but on the south and east it must be bounded by the outcrop. Southwest it is but a few rods to the line of the large field which fell in years ago, where the fossil forest was discovered, from which the stump in the Court House was obtained, and on this side is the effort to stay the progress of the fire by banking.

An Interesting Suit for Damages.—The Pittsburgh *Commercial* says: A somewhat novel suit for the recovery of ten thousand dollars damages has been instituted by a Cincinnati rolling mill company against a former employe. The plaintiffs allege that they had employed from one to two hundred employes in their works for more than five years past; but that on the 1st of November last this employe persuaded a number of other employes to leave their employment because they were dissatisfied with the wages paid, by reason whereof they have been unable to carry on their rolling mill from November until the present time. The company further alleges that it employed men to come from Pittsburgh to work in the mill at an agreed price, and that the defendant sought them out, and urged them to leave and not work for the firm, as they would be willing to do but for the persuasion of the defendant, who stated to them that if they would break their contract with the plaintiffs, and go away from the city, the company would be compelled to pay its old hands in Cincinnati the price demanded; that the defendant prevented them from commencing work, and caused threats of personal danger to be sent to the workmen, causing plaintiffs a great deal of delay in commencing operations of their rolling mill, for which they ask judgment in the above amount. We believe that some two or three years ago a suit of somewhat similar character was decided by the Supreme Court of Massachusetts in favor of the plaintiff. The progress of the suit will be watched with a good deal of interest, for the principle involved is one of great importance.

H. W. PEACE,

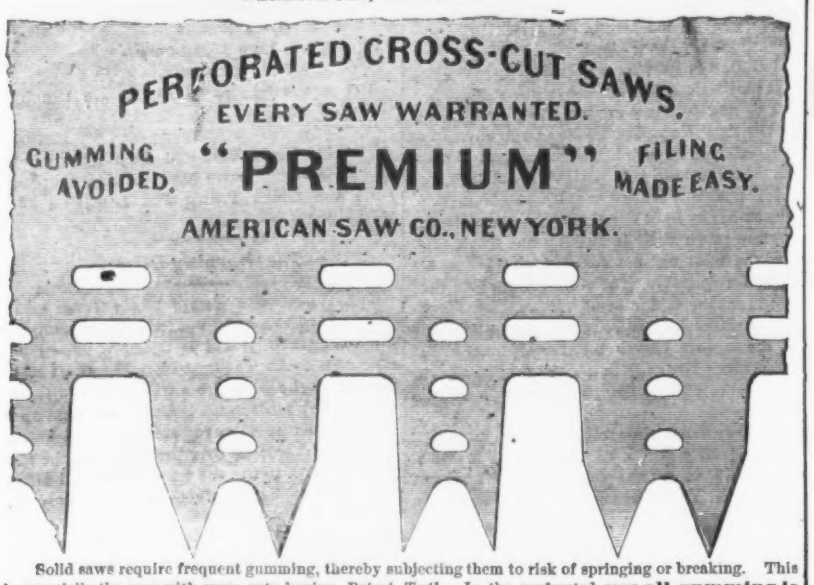
MANUFACTURER OF

SAWS OF ALL KINDS.

FACTORY, WILLIAMSBURGH, N. Y.

AMERICAN SAW CO.,

TRENTON, NEW JERSEY.

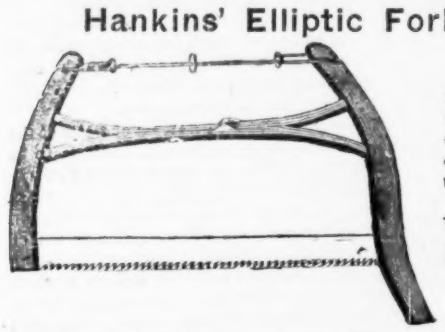


Solid saws require frequent gumming, thereby subjecting them to risk of springing or breaking. This is especially the case with cross cuts having *Patent Teeth*. In the perforated saws **all gumming is avoided** and the teeth are easily kept long and in *proper shape*, saving *files*, *labor*, *expense* and *vexation* As is well known, our saws cut faster, smoother and easier than any other.

MOVABLE-TOOTHED CIRCULAR SAWS AND SOLID SAWS OF ALL KINDS.

Hankins' Elliptic Forked Saw Frame.

Patented June 28th, 1870.



The annexed engraving represents HANKINS' ELLIPTIC FORKED SAW FRAME, which commends itself to the trade for its simplicity of construction. The Forked Brace being all in one piece, without any centre bolt, secures for the Frame great strength and durability.

These Frames are put up with my best Webs, marked "No. 40, Harvey W. Peace."

HARVEY W. PEACE
VULCAN SAW WORKS,
WILLIAMSBURGH, N. Y.

J. FLINT & CO.

Manufacturers of all kinds of SAWS and PLASTERING TROWELS.
ROCHESTER, N. Y.

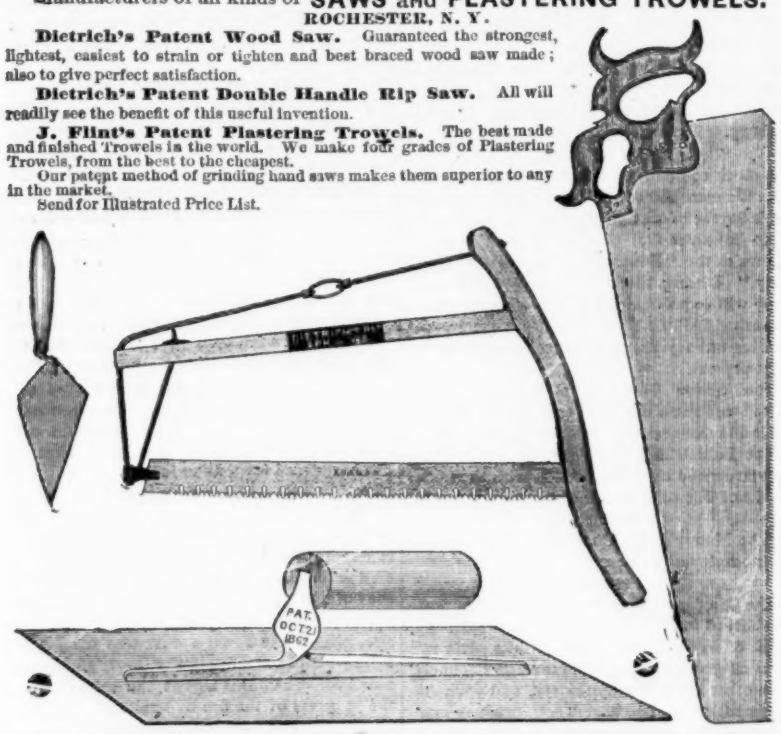
Dietrich's Patent Wood Saw. Guaranteed the strongest, lightest, easiest to strain or tighten and best braced wood saw made; also to give perfect satisfaction.

Dietrich's Patent Double Handle Rip Saw. All will readily see the benefit of this useful invention.

J. Flint's Patent Plastering Trowels. The best made and finished Trowels in the world. We make four grades of Plastering Trowels, from the best to the cheapest.

Our patent method of grinding hand saws makes them superior to any in the market.

Send for Illustrated Price List.



YALE LOCK MFG. CO.

Office and Works at STAMFORD, CONN., Salesroom 298 Broadway, N. Y.

In addition to their line of Celebrated Locks, would particularly call the attention of the Hardware trade to their extensive manufacture of

ORNAMENTAL **REAL BRONZE** HARDWARE,

Illustrated Catalogues of which will be furnished on application.

These goods are equal to the **best in the market,** while their **prices** are **very favorable.**

GEORGE GUEUTAL & SON,

39 West 4th St., New York.

IMPORTER OF

Wood Screws, Steel in Sheets,

BAND SAWS, TOOLS FOR BRAZING, &c.

Bed Screws, Pin Hinges, and Wire Nails a Specialty.

E. M. BOYNTON,

80 Beekman St., N. Y.

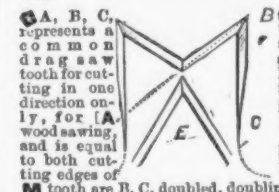
Manufacturer of

LIGHTNING SAWS.

A Challenge of $500, toward expense of a public test, to prove that the Lightning Saws excel all others in Speed, Ease, and Simplicity, has been offered since 1870, and has never been accepted. More than 100,000 Lightning Saws were sold during the year 1872, the purchasers of which testify to their superior merits.

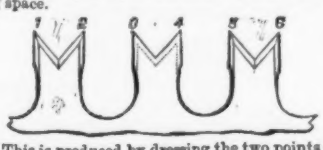
Our leading papers, such as the *Tribune, American Agriculturist, Christian Union*, etc., have published over sixty editorial notices recommending these Saws. Farmer's Clubs, Lumbermen, and Hardware Dealers unite in pronouncing the genuine Lightning Saw the greatest labor-saving implement of the age.

I have hundreds of letters from practical sawyers, voluntarily written, expressing their entire approval of these Saws.



A, B, C, represents a common drag saw tooth for cutting in one direction only, for wood sawing, and is equal to both cutting edges of M tooth are B, C, doubled, doubling the cut of the tooth A, B, C, or the tooth E, without loss of space.

B the common V cutting tooth E, of same space. B, C, is equal in its direct action, to both faces of V tooth, consequently the two faces of my



This is produced by dressing the two points of my M tooth, to cut in line so that the outside B, C, has four times the space of the slant edge behind it, or from 1 to 5, while slant has space from 1 to 2, the inefficient slant edges are thus practically concealed and do but slight surface cutting, while B, C, edges cut and clear simultaneously.

For Catalogue and additional information address.

E. M. BOYNTON, 80 Beekman Street, New York,
Sole Proprietor and Manufacturer.

N. Y. Saw Frame Co.

E. M. BOYNTON,
80 Beekman Street, New York,
SOLE AGENT.

I make a specialty of the LARGEST SIZES of **Circular Saws,** and call particular attention of lumber manufacturers to the following points of excellence:

Evenness of Temper.—The peculiar structure of my furnace subjects all parts of the saw to a DEAD heat, and when dipped in the oil bath secures perfect uniformity.

Perfect Accuracy in Thickness.—My saws are ground on a patent machine, automatic in its operation, grinding off the thick places upon the plate before the thinner parts are reached, and when the saw is removed BALANCES PERFECTLY, which is proof positive of the right accomplishment of the work.

Properly Hammered.—Great care is taken that no saw shall leave my works without due attention in this important particular. A saw too tightly strained upon the rim, or too loose in the center, cannot be successfully run—hence the importance of so hammering the saw as to effect equal strain in all its parts, and at the same time RUN TRUE. This department is under the personal supervision of myself, who has devoted over *twenty years* to the art of saw making.

I am sole proprietor and manufacturer of the celebrated **"Challenge" Cross-Cut Saw.** Price Lists of all kinds of saws sent on application.

JAMES OHLEN.

A. PARDEE, Hazelton, Pa. J. G. FELL, Phila.

A. PARDEE & CO.,

303 Walnut St.,
PHILADELPHIA
MINERS AND SHIPPERS OF

Lehigh Coals.

The following superior and well-known Lehigh Coals are mined by ourselves, and firms connected with us, viz.

A. Pardee & Co.	HAZLETON, CRANBERRY, SUGAR LOAF
G. B. Markle & Co.	JEDDO, HIGHLAND.
Pardee, Bro. & Co.	LATTIMER

OFFICES:

WM. LILLY Mauch Chunk, Pa.
WM. MERSHON, Agent, 111 Broadway N.Y
WM. H. DAVIS, Agent Easton Pa.

WHEELER, MADDEN & CLEMSON,

Manufacturers of Warranted Cast Steel

SAWS

of every description, including

Circular, Shingle, Cross Cut, Mill, Hand, Roberts' and other Wood Saws, &c., &c

Cast Steel Files

of the well known brand of

Wheeler, Madden & Clemson.

FACTORIES:

Middletown, Orange Co., N. Y.

BRANCH OFFICE:

97 Chambers Street, New York.

BRUNDAGE FORGED HORSE NAILS,

Manufactured from

BEST NORWAY IRON,

by BRUNDAGE & CO. Sold by

WHEELER, MADDEN & CLEMSON

Middletown, Orange Co., N. Y.

W. ROSE & BROTHERS

WEST PHILADELPHIA,

Manufacturers of

Plasterers' and Brick Trowels

Hammers and Chisels.

ALSO,

Saddlers' Round Knives etc.,

N. E. cor. 36th & Filbert Sts.

☞ Please send for Price List.

WM. McNIECE,

Excelsior Saw Works.

515 Cherry St., Philadelphia.

Manufacturer of

Extra Cast Steel Saws of every description,
Pat. Screw Socket Pole Pruning Saws,
Patent Screw Socket Edging Knives,
Patent Screw Socket Scuffle Hoes, and
Patent Screw Socket Paper Hangers' Scrapers,
Mowing Machine Sections of all patterns constantly on hand.

E. C. ATKINS & CO.,

Indianapolis, Indiana,

Saw Manufacturers.

Best Cast Steel Patent Ground Saws

Also, sole Manufacturers of Atkins' Patent

CROSS-CUT SAW HANDLE.

Best Patent Handle in use.

Manufactory and Office—Nos. 210 212, 214 and 216 South Illinois Street.

GENEVA HAND FLUTER

Manufactured by W. D. TURNER & CO. Geneva, Kane Co., Illinois. For Sale by GRAHAM & HAINES, 88 Chambers St. N. Y., Manufacturers' Agents.

Cutlery.

ESTABLISHED 1852.

NEW YORK KNIFE CO.

MANUFACTURERS OF SUPERIOR

Table & Pocket Cutlery,

WARRANTED TO BE MADE OF THE BEST MATERIAL.

WALKILL RIVER WORKS,
Walden, Orange Co., New York.

THOS. J. BRADLEY, President.

Wood's Hot Water-Proof Table Cutlery.

Handsomest, Cheapest, most Durable Cutlery in use.
Wood's Celebrated Shoe Knives. Butcher Knives a specialty.
WOODS CUTLERY CO., Antrim, N. H.
No. 99 CHAMBERS STREET, N. Y.

A. TILLMES & CO.,

AUGUST TILLMES. I. H CLAUSSEN.

521 Commerce St., Philadelphia.

Wholesale Cutlers.

Sole Agents for **Wm. Clauberg's Warranted Pen and Pocket Knives, Razors, Scissors, &c.**

SPECIALTIES:

Full Concaved Razors,
Wostenholm's Pocket Knives,
Razor Hones,
Russia Leather Razor Straps.
Wade & Butcher's Razors,
and Cutlery in general.

WILLIAM A. CARLYLE,

Importer of the

Celebrated XL all Cutlery.

Agent for LUKE OATES & CO., Sheffield.

50 Cortlandt Street, one door west of Greenwich Street, New York.

VAN WART, SON & CO.

Hardware Commission Merchants,

BIRMINGHAM, - ENGLAND,

Agents,

VAN WART & McCOY,

43 Chambers Street, New York.

George H. Gray & Danforth,

48 India Street, Boston.

F. W. TILTON,

17 Old Levee Street, New Orleans.

At each of these places a complete assortment of samples of Hardware and Fancy Goods will be found, including all new descriptions. Sole Agents for

John Rimmer & Son's Celebrated Harness and other Needles.

OSCAR IRVING VAN WART & Co.,

FORWARDING AGENTS,

2 South John Street, LIVERPOOL.

SCHOLEFIELD, GOODMAN & SON.

(Formerly JOSHUA SCHOLEFIELD & SONS.)

GENERAL

Hardware Merchants,

BIRMINGHAM, - ENGLAND.

Agents and Sample Rooms.

New York—Edward Frith, 16 Cliff Street.
Boston—H. L. Richards, 18 Batterymarch, Street.
New Orleans—R. Rhodes, 71 Camp Street.
Montreal—J. J. Evans 14 St., John Street.

35,000 Ringers Sold. HILL'S PAT. HOG RINGER, RINGS AND TONGS OR HOLDER. H.W. Hill & Co. 7,000,000 Rings.

DECATUR, ILLS.

If your Hardware Dealers do not have for sale send for circulars.

The Utilization of Waste Substances.

When Lord Palmerston was Home Secretary, under Lord John Russell's premiership, he had to attend to sanitary reform, and to many other subjects far removed from the foreign diplomacy with which his name is more especially connected. While so engaged, he propounded an aphorism which is excellent, both for its epigrammatic neatness and for its truth: "Dirt is only matter in the wrong place!" If society would duly act upon this truth, we should save millions a year; if, instead of considering dirt and refuse, sweepings and cuttings, scourings and washings, to be valueless, we could only bring ourselves to believe that they are good things in wrong places, we should be better both in health and in pocket than we are now. Practical chemists have long known this; medical men not unfrequently impress the fact on their patients; patentees of new inventions often show an appreciation of it; and the world is gettting wiser thereon every day.

A few months after the close of the Great Exhibition of 1851, Dr. Lyon Playfair gave a lecture on some of the results of that wonderful display, taking for his principal topic the recent advances in industrial chemistry. The production of perfumes was not the least curious of these examples. The lecturer showed that beautiful perfumes are now produced from the most trivial, and often from the most fetid and repulsive substances. If this were all, it would be a triumph of chemistry, and a benefit to mankind; but, unfortunately, the crooked commercial morality with which we are all too much acquainted, stepped in, and encourage a system of cheating and deception. It is scientific to obtain from decayed or unsightly refuse a perfume similar in odor to that obtained from a beautiful fruit or flower; but it is dishonest to call it by the name of that fruit or flower, and to charge a high price accordingly. "A peculiar fetid oil," said Dr. Playfair, "termed fusel oil, is formed in making brandy and whisky; this fusel oil, distilled with sulphuric acid and acetate of potash, gives the 'oil of pears.' The 'oil of apples' is made from the same fusel oil, by distillation with sulphuric acid and bichromate of potash. The 'oil of pine apple' is obtained from a product of the action of putrid cheese on sugar, or by making a soap with butter, and distilling it with alcohol and sulphuric acid; and is now largely employed in England in making 'pine-apple ale.' 'Oil of grapes' and 'oil of cognac,' used to impart the flavor of French cognac to British brandy, are little else than fusel oil. The artificial 'oil of bitter almonds,' now so largely employed in perfuming soap and for flavoring confectionery, is prepared by the action of nitric acid on the fetid oils of gas-tar. Many a fair forehead is damped with 'Eau de Millefleurs,' without knowing that its essential ingredient is derived from the drainage of cow-houses."

But without dwelling further at present on the roguery involved in all such misnomers and masked substitutions, let us glance at some among the almost innumerable examples of honest utilization of substances which used formerly to be denominated waste, or were at most regarded as possessing scarcely any appreciable value. Dr. Lyon Playfair adverted to some of these examples: "The clippings of the traveling tinker are mixed with the parings of horses' hoofs from the smithy, or the cast-off woolen garments of the inhabitants of the sister-isle, and soon afterward, in the form of dyes of brightest blue, grace the dress of courtly dames. The main ingredient of the ink with which I now write was possibly once part of a broken hoop of an old beer-barrel. The bones of dead animals yield the chief constituent of lucifer-matches. The dregs of port wine—carefully rejected by the port wine drinker in decanting his favorite beverage—are taken by him in the morning, in the form of Seidlitz powders, to remove the effects of his debauch. The offal of the streets and the washings of coal gas reappear carefully preserved in the lady's smelling-bottle, or are used by her to flavor 'blanc mange' for her friends." Very recently, this highly interesting subject has been traced throughout a much wider range by Mr. P. L. Simmonds, an experienced authority on all that relates to the materials for manufactures. In a paper read before the Society of Arts, he gave a wonderful variety of instances of the utilization of apparently unimportant substances. A bare enumeration of them would be beyond our limits; but it will be seen that—even leaving out all that concerns the devising of new forms of food for human beings, all that concerns the discovery of new fibrous substances for paper-making, and all the schemes for making town-sewerage available as agricultural manure—the variety is very remarkable.

Beginning with animal substances, and with such parts of them as belong to the skin, hair, and wool, we find that the skin of the dog-fish is used to make an abrading substance analagous to sand-paper. Eel-skin is made by the Americans into ropes and whip-lashes. Sole-skin is used to refine coffee and other liquids, in the manner of isinglass. Porpoise and walrus skins are tanned into shoe leather. Alligator skin is tanned by the Texans into leather much resembling fine calf. Snake skin is dressed to imitate shagreen. Old shoes and boots are "vamped" up, in Monmouth street and in Petticoat lane, the fractures doctored with "clobber," made of ground cinders and paste, and a little further life of usefulness given to them. In Yorkshire, there are "waste dealers," who buy up all the odds and ends from the woolen factories, and sell it to "shoddy" mill owners at Leeds, Dewsbury and Batley. These mill owners work up the refuse wool into "shoddy" or "mungo," mix it with a little new wool, and spin and weave it into broadcloth and doeskins, pilot cloths, druggets, coarse carpeting, baize and table covers. Woolen rags, however dirty, are bought up, torn to shreds, cleaned, made into an inferior shoddy, and wrought into the cheapest kinds of pilot cloths, beaverteens, Petershams, mohairs, Talmas, Raglans, paletots and other superbly named woolen fabrics. It is said that Leeds alone reproduces from rags as much wool annually as would represent the fleeces of four hundred thousand sheep. These rags may be the relics of worn out clothing, tailors' cuttings, old worsted stockings, carpeting, etc.; and there are large quantities imported from abroad, in aid of our home supply. A small portion, when ground up, makes flock paper for paper hangers; and another portion, chiefly carpet waste, is used to stuff mattresses, and also as an ingredient in the manufacture of Prussian blue. All the delicate materials for ladies' dresses, known by the names of balzarines, Orleans, Coburgs, alpacas, etc., are now imitated by mixtures of wool and cotton, although they may originally have been really wool or worsted. These mixtures, when decayed by long wear to the state of rags, undergo a metempsychosis; chemicals are employed to destroy the cotton, and the residue is worked up with a little new wool into cloth. It is within the region of fair probability that some of the wool in a lady's balzarine dress this year, may form part or her husband's overcoat twelve months hence. Cow hair is used in making mortar, felt, ropes, carpets and various substitutes for horse hair. And when the ingenuity of man can find no further manufacturing uses for the above varied animal substances, the farmer is always ready to buy them as manure; two and a half pounds of woolen rags are said to contain as much fertilizing power as one hundred pounds of farm yard manure.

Turning, next, to the skeleton and the inner portion of animals, the value derived from trifles is not less remarkable. Of bones, the best parts are worked up into handles for knives, etc.; into articles of turnery, and into numerous useful productions. Some portions are used to make bone-black or animal charcoal; others are boiled to extract size for dyers and cloth finishers; and all the rest are ground up into manure for farmers. The almost incredible sum of £800,000 is said to be paid annually in England for bones. Horns and hoofs are used for so many purposes that it would be scarcely possible to enumerate them; many valuable chemical substances are obtained from these sources. Whalebone cuttings and shavings are used for stuffing cushions, etc., for fire grate ornaments and for yielding Prussian blue. Dog fat is used to prepare kid gloves at Paris, and is also made to yield an oil used as a cheap—perhaps fraudulent—substitute for cod-liver oil. Wool scourers' waste, in which tallow or fat of some kind is always an ingredient, is now made to give up the wherewithal for stearine candles. The blood of slaughtered animals is used in sugar refining, in making animal charcoal, in producing the once famous Turkey-red dye, and in many other ways. The bile or gall of the ox is used as a detergent for wool or cloth, as a medicine, and by painters for cleaning ivory tablets used in miniatures, for fixing chalk and pencil drawings, and for mixing with certain colors. Fishes' scales are used for bracelets and ornaments, and fishes' eyes for undeveloped buds in artificial flower making. Butchers' and knackers' offal is cooked up in such modes as to be acceptable as food for cats and dogs. Bladders and intestines are prepared into the cases for sausages and such like articles of food; into water tight coverings for jars and apothecaries' vessels; into strings for violins and guitars, and into the beautiful membrane named (somewhat equivocally) "gold-beaters' skin." The French buy our old written parchments, and return them to us in the form of delicate kid gloves. All the odds and ends of skin and parchment of every kind are "grist to the mill" of the glue manufacturer. Calf's feet are boiled down to yield neat's foot oil for leather dressing; and sheep's feet to yield trotter oil, not unknown to our makers of hair oil. Fish garbage, whether at our fishing stations or at markets such as Billingsgate, is always saleable as manure. Last autumn, one particular shoal of herrings off Lowestoft was so enormously beyond the wants of herring eaters, that the fishers sold the fish to the farmers at 4/6 per ton! Many a fine field of hops in Kent has been rendered fertile by a manure of sprats and old woolen rags. One more example of the utilization of animal substances we cannot resist the temptation to mention. There are certain small brown domestic annoyances which tidy housewives cannot endure to hear even named, and which have received the masquerading designation of "B flats." Now, Australia has the misfortune to be very prolific in these B flats; and an enterprising colonist has devised the means of obtaining a useful brown dye from them. Knowing as we do what kind of red dye is obtainable from the cochineal insect, we have no difficulty in believing this statement concerning another small individual. The colonist will be a real "blessing to mothers," and to households in general, if he succeeds in using up this peculiar material.

It would be scarcely possible, even if worth while, to determine whether the animal or the vegetable kingdom furnishes the larger amount of usual refuse; suffice it to say, that the vegetable contributions are almost endless in variety. Let us begin with the fibers, the great material for textile clothing. When the cotton spinners are engaged in working up the hundreds of millions of pounds of cotton which our Liverpool and Glasgow merchants buy yearly, there are five kinds of waste which become scattered about the mill—"strippings," "flyings," "droppings," "blowings" and "sweepings;" all are carefully collected, not only for the sake of health and cleanliness in the workrooms, but because they have a money value The "cotton waste dealers" will give for the strippings and flyings about one-half or two-thirds the value of new cotton; and for the other three kinds a price about one-eighth or one-tenth of the original value. It is supposed that there is little less than fifty thousand tons of this waste produced in Great Britain annually; it is worked up into coarse sheeting and bed covers, or is sold to the manufacturers of printing paper, to be mixed with linen rags. In the United States, the cotton waste is worked up into papier mache for tea trays and other articles. Linen rags, beside their more prominent use in paper making, are largely made into lint for surgeons during war time. Coir, the fibrous husk of the cocoa, is employed as a material for matting, sacking, rope and other articles, especially where a power of resisting the attacks of insects is needed. Moss, from the woods of the Mississippi regions, is extensively used for making the bags or bales in which cotton is shipped; and when this service has been rendered, paper making affords a further resource. Sea weed is employed in France for a great variety of purposes: it is made into paper; it is used as a lining material for ceilings and walls, on account of its incombustible properties and its power of resisting vermin; and it is employed by manufacturing chemists as a substance whence iodine and acetic acid can be obtained.

[To be continued.]

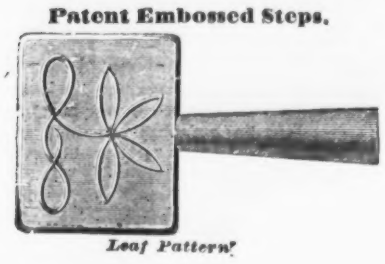
A Novelty in Ship Building.

The Boston *Advertiser* gives the following account of a vessel building without a frame at one of the ship yards of East Boston: She is 122 feet 6 inches long on the keel, 138 feet on deck, has 32 feet 6 inches breadth of beam and 12 feet 2 inches depth of hold, with 4 inches dead rise at half-floor. She has a long, sharp bow, with a raking stem, an upright sternpost, and a full, rounded body, indicating large capacity and buoyancy. Her keel is of hard pine, 12 by 14 inches; she has three depths of midship keelsons, each 12 inches square, and assistant keelsons of 10 by 12 inches. From the keel to the deck she is built of single logs of spruce, each 12 inches square, placed one upon another, and bolted together every six inches, the bolts one inch in diameter and three feet long. The garboards are bolted alternately through the keel and each other. On the flat of the floor she has timbers of 7 by 12 inches, bolted to the bottom and ceiled with 3 inch plank, and these are the only timbers in her. She is 12 inches thick throughout, and her iron fastening is the only substitute for timbers. Her stem, apron, cutwater, sternpost and rudderpost are oak. The main transom is also oak, 18 inches square, and at it the ends of her afterbody terminate. They are not, as in other vessels, mortised into the sternpost. This gives her a very clean run. The dead-wood, which forms the center of the run, is scarfed to the keelsons. The first piece extends 14 feet inboard, the second 8 feet, the third 5 feet, and the fourth 4 feet; thus the sternpost is backed by about 12 feet of solid timber, bolted in every direction. The rudder is of a novel construction, securely braced and hung. The ends have pointers backed by hooks. The beams are 14 inches square, the carlines 8 by 10, and the deck plank is 3¾ inches. The beams are let into the hull, and are also strongly secured with hackmetack hanging and lodging knees, bolted every six inches. The hanging knees are sided 7 inches, have 4½ feet bodies and 2½ feet arms; and the stanchions are 6 by 14 inches, clasped and bolted with iron above and below. Her bulwarks are about three feet high, built solid. She will have a trunk cabin, low enough above the deck to give scope for working the mizzen boom, and the accommodations for the crew will be forward. She will have three masts, fore-and-aft rigged, and 81, 82 and 83 feet long; the bowsprit will be 20 feet outboard, the jibboom 16 feet outside the cap and the other spars in proportion. She will have wire standing rigging, cotton duck sails, and be otherwise fitted out in first-class style. Mr. Gibson, who designed and has personally superintended her construction, says that 26 tons of iron have been used in her construction, but 40 per cent. less timber than in any other vessel of her capacity, with a corresponding reduction in labor, and that, having no frames, she cannot decay, and if springing a leak the leak can be stopped from the inside. As she is an experiment, he has built her of cheap materials, but notwithstanding this he considers her much stronger, and believes will prove more durable, than if she had been built in the usual style, with frames, planking and ceiling. She will be launched about the 24th instant.

Messrs. J. P. Abbott & Co., of Cleveland, Ohio, have for a year past been manufacturing the Excelsior eave trough fasteners, for which the following advantages are claimed: 1st. In dispensing with the use of braces, or stays, the tinner is enabled to make fully one-third more trough in the same space of time, while it can be packed very closely for transportation. 2d. They prevent all outside drip and rusting of the trough. 3d. They are superior to all others in the manner of attaching to the trough, requiring no rivets or solder, and cannot get loose by accident. Each fastener, when attached to the trough, is capable of bearing over seventy-five pounds without injury. The value of these conditions will be readily understood by the trade. The same firm have, during the winter, become the patentees of some useful improvements, prominent among which is a wire clasp for retaining the strap at the end of the shingles, by which means the wind is prevented from raising the trough and loosening the nails, without interfering with the flow of water or tending to rot the shingles. This concern also manufacture troughs for soldering gutters and improved clamps and standards.

H. D. SMITH & CO., PLANTSVILLE, CONN.

Patent Embossed Steps.



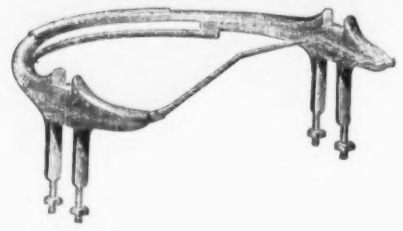
Leaf Pattern.

Star Pattern.

Established 1850.

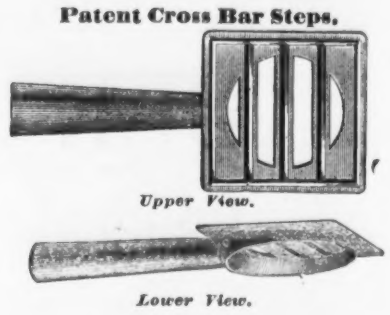
King Bolt Yokes.

No. 6 Fifth Wheels.



1871 Pattern Shaft Couplings.

Patent Cross Bar Steps.



Upper View.

Lower View.

Smith's Improved Philadelphia Pattern Slat Irons.

Solid Plain Pattern Steps.

MANUFACTURERS OF A LARGE VARIETY OF FIRST-CLASS

FORGED CARRIAGE IRONS.

Send for Price List.

FORT PLAIN SPRING & AXLE WORKS,

CLARK, SMITH & CO.,

Green Jacket Axles. FORT PLAIN, N. Y. Fine Carriage Springs.

MANUFACTURERS OF

English and Swedes Steel Springs, and Iron and Steel Axles.

Execute orders promptly for

Black, Bright, Tempered and Oil Tempered Springs,

Of any Pattern or Style. Also for **AXLES of any description, from a COMMON LOOSE COLLAR to the FINEST OF STEEL.**

Our facilities for manufacturing are very extensive, and with our recent additions of new and improved machinery, we defy competition.

Send for Price List and Descriptive Circular.

CARRIAGE BOLTS.

Buy the Best.

Clark's Patent Carriage Bolt.

Best Bolt manufactured for all kinds of agricultural machinery. Will not split the wood, and can not turn in its place.

MANUFACTURED BY

CLARK BROS. & CO., Milldale, Conn.

Also Manufacturers of

Plow and Machine Bolts, Coach Screws, Nuts, Washers, Tire Blanks, Rivets, &c

Send for New Illustrated Price List, just completed.

WILSON MANUFACTURING COMPANY.,

NEW LONDON, CONN.

MANUFACTURERS OF

SOLID BOX VISES.

With or without Convex and Concave Washers.

Jackscrews, Braces, Coffee Mills, Turning Lathes; Clamp Heads and Screws, Parallel Bench Vises, Sash Pullies, Ho House Pullies, Composition Cocks, Bench Screws, Vise Screws Gridirons, Drill Stocks and Bows, Box Chisels, Rivets, Sheaves, Block Pins, Composition Roller and Iron Bushings, Riggers' Screws, Caulkers' Tools, Pump Chambers, Belaying Pins, Marlin Spikes, Malleable Iron Castings, and Genera Hardware.

GALVANIZING DONE TO ORDER.

WILSON MFG. COMPANY,

Warehouse, 37 Chambers St., N. Y.

The National Screw Co.,

MANUFACTURERS OF

Patent Dovetailed Slot Gimlet-Pointed

IRON AND BRASS SCREWS.

COMPLETE ASSORTMENT OF SIZES.

RUSSELL & ERWIN MFG. CO., Sole Agents

45 and 47 Chambers Street, New York.

P. O. Box 3288 Orders filled promptly

CONCORD SPRING WORKS,

J. PALMER & CO.,

Manufacturers of

CARRIAGE SPRINGS,

Superior Temper, Warranted.

CONCORD, N. H.

Philadelphia Star Bolt Works.

"STAR"

Carriage and Tire Bolts,

NORWAY IRON,

Button Head.

QUALITY GUARANTEED.

Philadelphia List.

Trade Mark.

XL

Carriage and Tire Bolts,

CHARCOAL IRON,

Beveled Head.

QUALITY UNSURPASSED.

Old New England List.

The Celebrated "STAR" Brand of Axle Clips.

Blank Bolts, Wood Screws, Square Head Bolts, Plow Bolts, &c., &c.

Our I X L Bolt is made from approved brands of Iron, and is equal in every point of appearance to the regular Philadelphia Carriage Bolts, being made on the same machinery, and the quality is not surpassed by any bolt of like grade in the market.

TOWNSEND, WILSON & HUBBARD, 2301 Cherry St., Philadelphia, Pa.

UNION NUT CO., New York,

78 Beekman Street,

Agents for

HART'S PATENT SAW SET.

(CUT ¾ SIZE.)

Upon trial will be found to be the most powerful and simple Saw Set ever offered to the public. Care has been taken to make the parts of the best material, and of proper proportions to give the greatest strength. It is made of the best Malleable Iron, except the Set Lever, which is of the best Cast Steel, and properly tempered.

DIRECTIONS FOR USING.

Adjust the Brass Gange to the tooth to be set; then adjust the top gauge by means of the screw on the top until the gauge rests solidly on the saw blade. It will be readily seen that more or less Set can be given to the Saw by turning the set screw on top up or down.

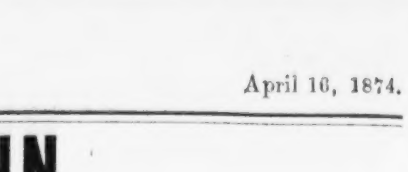
Iron & Brass Wood Screws.

Full assortment constantly on hand.

ALFRED FIELD & CO.,

Importers,

47 John, and 5 Dutch Streets, N. Y.



ARMS, BELL & CO.,

Manufacturers of

Carriage, Tire & Square Head Bolts.

Cold Pressed Nuts and Washers, Etc.,

YOUNGSTOWN, OHIO.

Price lists sent on application.

H. M. WENTWORTH & CO.,

Manufacturers of

Carriage Axles & Springs,

BEST SWEDES STEEL,

Sword Tempered, and

Common Patent Tempered SPRINGS

Of every description, made to order.

Dam No. 3, Water St., Gardiner Me.

Send for Price List.

H. M. Wentworth. F. A. Plaisted.

David Wentworth.

HOWSONS'

OFFICES FOR PROCURING

UNITED STATES AND FOREIGN

PATENTS,

Forrest Buildings

119 SOUTH FOURTH ST., PHILADELPHIA,

AND MARBLE BUILDINGS

1605 Seventh St. (Opposite U. S. Patent Office, *Washington, D. C.*

H. HOWSON, Solicitor of Patents. | C. HOWSON Attorney Law.

Communications should be addressed to the PRINCIPAL OFFICES PHILADELPHIA.

JAMES A. WHITNEY, Patent Agent and Expert, offers his service to inventors in securing **American and Foreign Patents,** as expert in patent cases, etc.

"We take pleasure in commending the new agency to the favor of inventors." *The Iron Age*, June 6.

"Of Prof. James A. Whitney we can speak from a personal acquaintance. Any person seeking professional advice from him will be certain of just and honorable treatment." Norwich, Conn., *Daily Advertiser* May, 29.

"His long experience in this field of investigation has made him familiar with the business in all its branches, and we can confidently recommend him to those needing his services." *Prairie Farmer*, Chicago, June 1.

"Few persons have had more opportunities for learning the necessities of such a business." *The World* (weekly), New York City, June 19.

"A thorough mechanical engineer with a valuable practical experience in the machine shop." *Am. Railway Times*, Boston, June 8.

"Mr. Whitney is qualified by experience and practical knowledge. His life and experience have been such as to develop the fullest sympathy with men engaged in industrial pursuits, especially inventors. *Moore's Rural New Yorker*, June 8.

Address, for full information, free of charge.

128 Broadway, Room 11, New York City.

OILERS! OILERS!

J. H. WHITE, Newark, N. J.

MANUFACTURER OF

Olmsted Patent and Common Oilers,

of all descriptions,

Colwell Patent Door Spring Children's Carriage Trimmings, Spun and Stamped Brass for all Trades, Dies and Tools &c., &c.

The Iron Age.

New York, Thursday, April 16, 1874.

DAVID WILLIAMS . . . Publisher and Proprietor.
JAMES C. BAYLES . . . . Editor.
JOHN S. KING . . . . Business Manager.

The Iron Age is published every Thursday morning, at No. 10 Warren Street, New York, on the following terms:

SUBSCRIPTION.

Weekly Edition.....**$4 a year.**

Issued every THURSDAY Morning. Contains full Trade Reports for the week, brought up to the close of business on the previous day.

Semi-Monthly Edition.....**$2 a year.**

Issued the FIRST AND THIRD THURSDAY of every month. Contains a full Review of the Trade for the previous half month.

Monthly Edition.....**$1 a year.**

Issued the FIRST THURSDAY of every month. Contains a full Review of the Trade for the previous month.

To	Weekly.	Semi-Monthly.	Monthly.
Canada	$4 40	$2 40	$1 24
Great Britain	6 00	3 00	1 50
France	6 00	3 00	1 50
Germany	8 00	4 00	2 00
Prussia	8 00	4 00	2 00
Buenos Ayres	8 00	4 00	2 00
Peru	6 00	3 00	1 50
Belgium	8 00	4 00	2 00
Mexico	7 00	3 50	1 75
Sweden	12 00	6 00	3 00
New Zealand	8 00	4 00	2 00
Brazil	6 60	3 30	1 65

ADVERTISING.

One square (12 lines, one inch), one insertion, $2 50; one month, $7·50; three months, $18·00; six months $25·00; one year, $40·00; payable in advance.

All communications should be addressed to

DAVID WILLIAMS, Publisher,
10 Warren St., New York.

EUROPEAN AGENCY.

CHARLES CHURCHILL & Co., American Merchants, 28 Wilson Street, Finsbury, London, England, will receive subscriptions (all postage prepaid by us) at the following prices in sterling: Great Britain and France, 25/; Germany, Prussia and Belgium, 23/4; Sweden, 50/. They will also accept orders for advertisements, for which they will give prices on application.

City Subscribers will confer a favor upon the Publisher, by reporting at this office any delinquency on the part of carriers in delivering *The Iron Age:* also, the loss of any papers for which the carriers are responsible. Our carriers are instructed to deliver papers only to persons authorized to receive them, and not to throw them in hall ways or upon stairs; and it is our desire and intention to enforce this rule in every instance.

CONTENTS.

A Plan for the Settlement of Wages Disputes in the British Iron Trade.

Mr. Thomas Barningham, of the Darlington Iron Works, has issued the following letter to employers in the malleable iron trade, in which he suggests what he believes to be a practicable method of adjusting the differences between workmen and employers, on a basis satisfactory to both parties. As his scheme may be found to contain some suggestions of interest to employers in this country, we publish the letter in full. If the men could be induced to adopt the plan, and to accept as final the showing of the auditors appointed to examine employers' books, we have no doubt it would work as well as any other plan of participation—perhaps better:

Gentlemen: The malleable iron trade is now in a great difficulty, owing to the abnormal state of the wages question. The sliding scale, which was established some years ago, was in those days a reasonably satisfactory method of adjusting wages, and would have remained so had the price of coal continued almost stationary; but while this article has, during three years past, been increasing to upward of 300 per cent. more than its original value, the difficulties in store for the malleable iron trade were also increasing, simply for the reason that the profits out of which to pay wages had not increased at all, but have been, I believe, actually less than when coal began to advance in price. However, be this as it may, the sliding scale, acting only on the selling price of finished iron, has proved itself to be based on a thoroughly false principle. My object now is to propose a substitute which shall be so reasonable as to recommend itself to the thoughtful consideration of both employers and employed. I look at the question in the light of a partnership or firm consisting of all the employers and all the workmen laboring together for one result, namely, profit arising out of the workmen's operations, and out of which both parties shall have an equitable and mutually satisfactory proportion. No one can deny that so far this proposition is fair and reasonable, and assuming this to be admitted, I will explain the method by which this proposition can be carried out. In the North of England we fortunately have established, in connection with the Board of Arbitration, a thoroughly reliable method of ascertaining, for given periods, the exact average selling price at which finished iron has been sold over the whole district. My idea is to increase the usefulness of this plan by ascertaining through it the whole actual average cost of production over the same period, basing the calculation on the actual average selling price of the most important of the raw materials, say, coal, iron and fettling. Deducting the cost of production from the selling price, would leave the average profit per ton, to which I propose wages shall bear a relative proportion, and I need hardly say that in this lies the main virtue of my proposal. To ascertain the average cost of the raw materials, I would have the auditors to the arbitration board to examine for given periods the books of, say, all or some of the most important colliery firms, and so tabulate the whole of their sales as to be able to determine the actual average price per ton of unscreened and screened coal for manufacturing purposes. In like manner the prices of pig iron and fettling could be reliably ascertained. The various firms from whom such information would be desired would, I think, readily open their books, seeing that they all have such a sterling interest in promoting the welfare of the malleable iron trade, and also because the information given would only be known to the auditors, who would simply communicate an average price of the whole. It will be seen that this method of ascertaining the cost price of finished iron entirely frees the workmen from the effects of favorable and unfavorable purchases of the raw materials by their employers.

After ascertaining the average market value, the cost sheets of the respective firms in the malleable iron trade, whether in rails, plates or bars, shall be worked out on the basis of the different prices ascertained, and when determined, the auditors would gather the whole into one grand total of weight and money, and thus arrive at the average cost price over the whole district for any given period. It would have to be assumed that each firm had about the same ability and facilities for producing finished iron cheaply, and, therefore, the cost sheets of the respective firms would be accepted in all their details, excepting in the matter of prices of coal, iron and fretting—which would be furnished by the auditors. It will also be observed that the adoption of the method I advocate would give the men an incentive to work with as little waste of time and materials as possible, so that by keeping down the cost, the employers' profit is increased, and thus beneficially affect their own wages. I lay particular stress on this, as it is a well known fact that the cost of production is in no small degree affected by the neglect of workmen, and the consequent waste of materials—and so soon as this feature is realized by the men as a body, I feel sure there would be far more pleasure and satisfaction for all parties concerned than there has been for years past.

By way of illustrating the practical working of my proposition, I would assume that the auditors on behalf of both employers and employed have ascertained, in the manner before mentioned, the price of coal, pig iron, and fettling materials, and, after calculation under the auditors' supervision, and the separate totals of money and weight of finished iron, produced by each firm, shall be added together, and thus arrive at the average cost price over the whole district for any given period, which, say, for example, works out to £10. 15/, and the average selling price (which please bear in mind is periodically determined by the means already in operation), shows over the whole district, say £11. 7/6, the average profit would, of course, be 12/6 per ton. What proportion wages should bear to this amount is the important point to be decided, but, though a momentous question, I think there is with both employers and employed sufficient desire for what is only fair and just as would easily overcome this difficulty. My own idea, however, is that for puddling it would be found reasonable to pay a shilling per ton for every shilling profit, the minimum commencing at 7/, and allowing the maximum to be whatever the profit worked to. The above example, showing 12/6 per ton profit, would give 12/6 per ton for puddling, and all other wages in the mills and other departments being in proportion. If the profit should show 15/, then puddling would be 15/ per ton, or higher or lower, as the case might be, for whatever the profit was, it would be the direct result of the men's labor, and their steady or unsteady attention to their duties. In conclusion, I venture to hope that the plan here sketched out for determining wages will meet with careful consideration, for I believe it would, after a short time, prove to be the missing link in the bond of union between capital and labor, which has been so long and so ardently desired by the trade.

There are, perhaps, many points which would require full explanation; if so, I should be glad, as far as I am able, to make my proposition more clear.

I am, gentlemen, yours, respectfully,
THOS. BARNINGHAM.
Darlington Iron Works, 25th March, 1874.

The Currency and Prices.

The Senate bill providing for an increase of legal tenders and national bank notes, having passed the House without amendment, now awaits the President's signature to become a law. That he will sign it is probable. Judging from the talk of the contractionists and opponents of a currency increase, such increase will cause an immediate advance in the price of everything, will give everything a fictitious and speculative value, impoverish the working classes by diminishing the purchasing power of a dollar in percentages variously calculated, and indefinitely postpone the resumption of specie payments. Now, we do not believe any such results can reasonably be expected. We do not approve the Senate bill in all respects, for the reason that it empowers the Secretary of the Treasury to play fast and loose with some $18,000,000 of greenbacks remaining from the $44,000,000 of so-called reserve, and to call in the $26,000,000 which he has issued of it whenever it shall seem to him expedient to do so. It furthermore authorizes an increase of $46,000,000 in the national bank circulation, but imposes such conditions as to bank reserves as will neutralize, in a great measure, the benefits of the new issue. In these respects the bill is essentially defective, and should have been amended. It is not our purpose to discuss its merits, however, but merely to consider whether any such dire consequences as have been predicted are likely to result from it.

It is a very common notion among the intelligent classes of the community that if the amount of money in any country were once fixed and determined, it would represent the exchange value of all transfers of property and services, no matter what its quantity may be. We find this idea running through nearly all discussions on the state of the currency, and underlying nearly all schemes for the reform of existing evils in business. The mass of the people believe in this doctrine, and a majority even of those who aspire to recognition as public advisers not only believe it, but cite "authorities" to prove it. Hume made this mistake seventy-five years ago, and Mill repeated it as lately as 1865, in the following language: "The doubling of the money in use would do no good to anyone, would make no difference except that of having to reckon pounds, shillings and pence in higher numbers. It would be an increase of values only as estimated in money, a thing only wanted to buy other things with, and would not enable anyone to buy more of them than before. Prices would have risen in a certain ratio, and the value of money would have fallen in the same ratio. This ratio would be precisely that in which the quantity of money had been increased. If the whole money in circulation were doubled, prices would be doubled. If it was only increased one-fourth prices would rise one-fourth." This is a very plausible theory, and the confidence with which it is uttered is calculated to commend it to unquestioned acceptance. Without doubt, if the pendulum of a clock beats two strokes for one to the second, the hands will make the circuit of the dial twice as rapidly, without quickening the actual flight of time. Here we have a very pretty analogy, but if we look further we will find it based upon assumptions which have nothing whatever to recommend them to attention except the mathematical symmetry of dogmatic statement.

It may safely be stated as a fact, that in no country of the world does the amount of money in circulation equal, or bear any constant proportion to, the exchange values in its markets. Before the war our gold, silver and bank note circulation never reached the sum of four hundred millions, and if from this be deducted the amount hoarded or withdrawn, the aggregate in actual circulation was probably not more than three hundred millions. Yet in 1860 the annual products of domestic industry were worth three thousand millions by the actual money standard of the time. If but two thousand millions of this went to market, and another thousand millions worth of real estate was bought or sold, and still another thousand millions paid for professional services of various kinds, which contributed nothing directly to the production of marketable commodities, we had no less than four thousand millions to be paid and received. We see thus that the relation of money to exchange values in 1860 was about one dollar to thirteen. Supposing this to have been exactly the proportion on any given day of 1860, is it probable that the letting into circulation on the following day of the one hundred millions hoarded or withdrawn, would have increased the price of all commodities thirty per cent? or would it have that much advanced any prices whatever by its own proper operation, that is, by the action of the additional sum. Is it not more likely that it would only have increased the saleability of raw materials, machinery and labor, by accelerating commercial movements and quickening the industrial activities of the nation? And would not the increased product of labor, suddenly called upon to meet the new demand—supposing peace to have continued unbroken by civil strife—have filled the markets and reduced prices by quickening the competition between producers seeking purchasers for their products? This seems to us a reasonable and common sense view of the case, and what would have happened in 1860 under given conditions, will happen under like conditions in 1874.

Whether a theory of finance is reasonable or not can best be determined by a careful examination of history. A case in point suggests itself which may be briefly considered in this connection, as bearing upon the relation of money circulation to prices. During the thirty years from 1818 to 1848, England's imports of the precious metals, in excess of her exports, averaged ten millions of dollars per annum. In this period her exports of commodities increased in quantity 236 per cent., but only 31 per cent. in value. In 1848 the value of these exports was $640,000,000. It is probable the nation retained products to an equal value for home consumption, or about $25 worth per head of population, so that the value of the industrial products of Great Britain in that year was about $1,280,000,000. Basing a calculation upon the percentages above given, we find that the industrial products of Great Britain declined 60 per cent. in value in the thirty years, from the $3,200,000,000 they would have cost in 1818, to $1,280,000,000, their actual market value in 1848, while the money of the country was increased $300,000,000. During this period the price of food experienced only such fluctuations as resulted from causes temporary in their operations. The same was true of the prices of fuel, wearing apparel and all the necessities of life, and it is quite certain that Mr. Mill's theory did not apply to that period, at least.

If the theory to which we have alluded were true in the general application, it would be at fault in seeking to establish an exact relation between the amount of circulation and the price of commodities. No such relation exists. No one but a theorist would attempt to measure the effect upon prices of commodities, of a deficiency in the money supply in any case where money is needed, by the percentage of that deficiency. The want of money wherewith to purchase may cheapen commodities by diminishing the demand for them, and with an increase in the available money supply these prices may advance; but in the one case the decline is due to commercial stagnation, in the other the advance is due to healthy commercial activity.

If by increasing the circulation the value of money is depreciated in proportion to such increase, the difference must, of course, be added to the price of commodities, without altering their value as gauged by any fixed standard. Such, however, is not the case in this instance. No one will have any less confidence in the integrity of the government after an increase of the legal tender circulation to $400,000,000, than he has to-day, nor will any one exchange a national bank note for a less value after an increase of national bank circulation by $46,000,000, because of such increase, than he would to-day. We are not going to repudiate either our greenbacks or our government bonds, and no person of sound judgment fears any such result from such "inflation" as is now contemplated. That we need more currency is the almost unanimous testimony of business men in all parts of the country. The rate of interest for the use of money is steadily on the increase, and to conduct a business of any magnitude on a cash basis, or anything approaching it, is next to impossible. Everywhere we hear complaints of the difficulty of making collections, and both merchants and manufacturers are often compelled to tide themselves over seasons of monetary stringency by borrowing money at high rates, while waiting to collect good debts to an amount often far in excess of their immediate necessities. It is easy to make ingenious theories of finance to account for all this, but the merchants, the manufacturers and the farmers know that the principal reason for it is the want of more abundant currency. Ten years ago Congress fixed the amount of currency the country was permitted to have, but while the amount of this circulating medium has been steadily reduced by hoardings, destruction by fire, shipwreck, &c., the necessities of trade for currency have enormously increased—hence the necessity for a proportionate increase of currency. The plan of increase proposed in the Senate bill is not, we think, the best that could be devised, but it is infinitely better than no plan at all, and the President may sign it without any fear that its effect, as a law, will be other than generally beneficial to the commercial interests of the country.

The Foreign and Domestic Production of Lead.

The lack of trustworthy statistics from Spain has, of late years, rendered it difficult to ascertain the statistical position of lead with even approximate accuracy. About all we know of its present position was contained in a London telegram, published in the metal report of last week's issue, to the effect that the stocks in first hands in Europe are very light, and that nothing but a more active demand is needed to produce an improvement in the tone of the market, and to advance prices.

That the productive capacity of Spain is very large, and that the normal production of the Peninsula greatly exceeds that of Great Britain, is clearly shown in the last official export tables embracing the five years 1866 to 1870, which we gave in our issue of Oct. 9, 1873, under the title of "Spain's Mineral Resources and the Civil War." On referring to this government report, it will be seen, that Spain exported in 1866, 55,350 tons; in 1870, 77,500, and that the latter consisted of 38,000 tons pig lead and 39,500 tons silver bearing lead; and that the average export during the five years was 84,140 tons, the total being 420,700 during that period, an excess of 55,000 over the previous five years' product. These 420,700 tons were extracted from 1,836,000 tons of ore, the percentage of yield of Spanish ore being very low.

During the same period, Great Britain has raised only 530,000 tons of ore, and produced therefrom 386,900 tons of pure lead, the percentage being a high one, generally 73 per cent., thus yielding on an average 77,380 tons annually. The following shows the English production from 1864 to 1868:

	Lead Ore. Tons.	Lead. Tons.
1864	94,463	67,081
1865	90,452	67,251
1866	91,051	67,391
1867	93,432	68,441
1868	95,236	71,017

Giving an average lead production of 68,236 tons. The consumption of Great Britain in 1868 was 78,789 tons, the excess of imported lead retained having been 6692 tons.

The general European production from the same statistical sources, according to the latest data then at hand, was grouped together as follows:

	Tons.
Great Britain, average of 1864-'68	68,236
Spain, 1866	66,803
France, 1864, to a great extent Spanish	16,692
Germany, 1867	49,337
Sardinia, 1867	23,255
Belgium, 1867	10,352
Greece, 1869	8,483
Austria, 1867	7,637
Sweden, 1868	284
	251,079

While Spanish production in the Southern portion of the Peninsula, where the mines are situate, has been interfered with during the winter months by the political troubles, the Laurium mines, of Greece, have been more productive than ever, yielding, as they do, 30 tons daily, with a large accumulation of ore on hand, and an added smelting capacity in new works erected during the present year. The British production in 1871 and 1872 was the following:

	1872. Tons.	1871. Tons.
Lead ore	86,968	93,965
Yielding lead	60,455	69,056

The import and export movement in Great Britain was as follows during the past two years:

	1873. Tons.	1872. Tons.
Import—Lead	60,303	70,069
Export—Pig, rolled, sheet, piping and tubing	32,209	44,330
Excess of imported lead retained	28,094	25,739

The export movement is detailed as follows:

	1873. Tons.	1872. Tons.
To Russia	7,933	8,032
To France	1,494	2,022
To the United States	2,917	8,353
To China	3,929	7,082
To British India	1,183	2,799
To Australia	1,824	1,859
To other countries	12,929	14,183
Total	32,209	44,330

As Spain consumes very little of its own lead product, the country exports nearly the whole of it, and when the political troubles broke out in the southern portion of the Peninsula, pig lead was hurried to the ports to be shipped off, so as to save it from being confiscated as contraband of war by either of the contending forces. On the surrender of Carthagena to the national troops, it was supposed that a large accumulation of lead would be found stowed away in the city, but this was not the case. Extensive ore contracts for delivery during the current year were thereupon purchased at rather high prices, and there was every appearance of a rising market all over Europe, when the failures at London and subsequent general stagnation in the metal trades produced a contrary effect; the depression, with gradually lowering prices, having lasted since the beginning of the year in the various European consuming countries.

The present civil war in Spain is mainly confined to the northern seaboard. In the south it is limited to Catalonia, and there is no impediment to the production of lead at present. Should the Carlists be successful and capture Madrid, Andalusia, after escaping the intransigente troubles, may become the theatre of civil strife also, and in such an event lead production might be seriously hampered and curtailed. The magnitude of this interest in Spain we have shown, the Peninsula furnishing about one-third or one-fourth of the entire European production.

Our own annual consumption now amounts to 60,000 tons, about half of which we, in normal times, produce ourselves, and the other half we have to import. Our production has been steadily on the increase, while our imports have grown gradually less. The following shows our importations for a series of years:

LEAD IMPORTS INTO THE UNITED STATES.

	Tons.		Tons.
1862	36,200	1868	23,255
1863	12,600	1869	35,111
1864	27,900	1870	28,600
1865	13,600	1871	28,000
1866	27,200	1872	23,250
1867	23,225	1873	22,000

Domestic production during the current year is likely to be considerably less than

that of last year, when we turned out 20,000 tons from the West and 9000 from bullion on the seaboard. The late panic compelled a good many smelting establishments to suspend work, and they have remained closed ever since. Until confidence in trade circles is fully restored, it is not likely that these less favored establishments will resume operations. Consumption, on the other hand, with less building going on all over the country, is not likely to be very great. But however this may be, lead is not a speculative metal, although it may be temporarily depressed by circumstances, as at the present time in Europe; and when thus depressed consumers cannot well make a mistake by anticipating future requirements to a liberal extent.

Strikes and Rumors of Strikes.

The old proverb, "Experience teaches fools," is only partially true in the case of our puddlers and other iron workers. At least, it is true only so far as the fools who are said to be taught by experience have themselves suffered the consequences of their own folly, and does not apply to those who have only witnessed, in the cases of other fools, the punishment of follies akin to their own. For instance: The puddlers in the mills about Harrisburgh, after a four months' strike in consequence of a reduction of their wages from $6 per day to $5, have gone to work on employers' terms, and openly severed their connection with the union, which betrayed them into an act from the consequences of which they have suffered heavily, and will continue to suffer for years to come. If the men had had any judgment, or sufficient collective intelligence to see that a reduction of wages from last year's average is the only condition on which it is possible for a majority of manufacturers to continue operations this season, they would probably accept the situation and work for such wages as employers can afford to pay. But they are as blind to their own interest as they are indifferent to the interests of the masters. In the vicinity of Reading and other centers of iron manufacture the puddlers are getting ready to repeat the foolishness of the Harrisburgh operatives. A few days ago a conference of the United Sons of Vulcan was held at Reading, at which the subject of a general strike was discussed, and the following adopted as the men's ultimatum to the employers:

We propose to go by market prices. If iron sells at $73 to $75 per ton, the boiling price shall be $6·75, helpers to be paid by the heat, 48 cents. When puddling is $5·75, no allowance to be received from the companies. If iron advances $5 per ton, the price for boiling shall be increased 25 cents. If there be a decrease in the prices, the puddling rates shall fall in proportion—all questions of differences to be settled by arbitration, the wages to be decided by the average price of iron during each preceding month. Pay day shall be the third Saturday of each month.

Naturally, the ironmasters are determined not to accept this proposition, and as the union is well supplied with funds, a general strike is not improbable. The men in several large establishments have already struck, and others have made demands which cannot be met. From many parts of the country we hear the same story, and several of our largest establishments are standing idle because the men will not work for the highest wages which employers can afford to give. If the men can thus stand idle at a time when those in other trades who have steady employment consider themselves fortunate, and when a majority of the masters are trembling at the prospects of the immediate future, surely the time has come when active measures for the repression of the unions are imperatively demanded. The masters must combine for their own protection, and when the struggle is that of combined labor against combined capital, the masters will only need to keep faith with each other to break the unions and emancipate the workingmen from the tyrannous rule to which they have so long submitted. In our judgment, the only way in which the evil of strikes can be met is by an agreement among employers to hire no man who cannot show a discharge from his last place. This may seem to be a violent remedy, but the circumstances will justify recourse to any expedient which may be needed to save the iron trade from utter demoralization.

Plan for an Indo-European Railway.

The project of a railway to connect Western Europe with the richest portions of Central Asia and, further on in the future, the far eastern parts of the Continent, has lately attracted a much larger degree of attention in Europe, but particularly in England and Russia, than was ever previously bestowed upon it. The more intelligent classes of the people of India are likewise beginning to look upon the proposed railway with some appreciation of its importance to Asiatic welfare. The plan is that of M. Ferdinand de Lesseps, and aims to unite directly the south, and indirectly the west, of Europe with Central Asia by way of Russian territory. The Indian opinion of the proper relations between Great Britain and Russia regarding the Asian possessions of the former will have a great influence in determining the national jurisdictions through which the route should run, if it ever develop into an undertaking. One of the most credited organs of public opinion in British India, the *Bombay Gazette*, treated of these relations and of the benefits of the proposed railway very fully in its issue of January 10 ult., and earnestly desires its success. M. De Lesseps' project is not the first of its kind, but it is the first that has ever had the advantage of being favored by British and Continental capitalists. The *Bombay Gazette* thus speaks of the line which M. De Lesseps has chosen for his railway:

It is needless for us to say that the route which M. de Lesseps has chosen for his line is not one that commends itself to Anglo-Indian politicians, whose chief desire is to keep any overland railway that may be made well out of the reach of Russia. Sir Henry Rawlinson's line from Constantinople through Persia answers the Anglo-Indian definition of a safe line politically, and it has also the recommendation that it would be the shortest line from Europe to India. But the failure of the Euphrates Valley Railway scheme and of Baron Reuter's concession has proved that the English government will not take upon itself the responsibility of assuming in Turkey and Persia that control over the native governments which is demanded as a security by European capitalists before they will invest their money in a railway running through those misgoverned countries. M. de Lesseps claims, on the other hand, for his scheme that it will run in Asia only through Russian and English territory, for he considers that the Russian frontier really extends to the Oxus, and that Afghanistan is practically one of the protected States of the Indian Empire. If, then, he can get both England and Russia to agree that his project is a good one, the thing is done. And why should they not agree? We are thankful to believe that at last the government of India has fairly abandoned the obsolete and stupid foreign policy of treating the Himalayas as a sort of natural Chinese wall for the English possessions in India, and of discouraging any kind of intercourse between India and the countries beyond those mountains. It is certain, too, that if Russia and England are to meet one another some day in deadly strife for the dominion of Asia, the existence of a railway will give no advantage to one combatant over the other, while in times of peace—that is, for 19 years out of every 20—it must do infinite service to both States. Our own belief is that an overland railway will be specially beneficial to India, because it cannot but develop native trade, which is now checked by the dread the people of this country have of crossing the sea. The scheme, however, is yet in its infancy, and the main object of the journey of M. Victor de Lesseps and Mr. Stuart is to consult the leading political, commercial and railway authorities in India, and with the help of what they hear, and what they may observe for themselves during a few months' stay in Upper India, to collect statistics which will justify the formation of a company to make preliminary surveys of the territory from Peshawur across the Hindoo Koosh to the Oxus. We heartily wish success to the enterprise, and we are sure M. de Lesseps and Mr. Stuart may count on obtaining the courteous co-operation of the Indian government and public."

The foregoing observations contain an indication of the principles which ought to guide the active policy of the Indian government. As regard the particular route that may finally be chosen, the reasons are obvious why it ought to pass through territory subject only to European dominion. Speaking of the sentiments expressed by the Bombay *Gazette*, the Russian *Goloss* says:

The political press of British India begins to speak favorably of the new project. The only objection expressed by the masters of India is that ancient and unfounded fear that India may become necessary to Russia at some more or less distant epoch. How strange it is that in Europe civilized nations should be able to exist in all the relations of good neighborhood, and without attempts to subjugate each other, but that the question should immediately present a different aspect when it relates to Asia. There, two civilized nations having become neighbors, must, therefore, begin a death-struggle for the domination of Asia. We confess that this idea is beyond our comprehension, and we think it quite possible that in Asia, as well as in Europe, we could desire to remain at peace with a good neighbor. We are informed that, in consequence of a report submitted by the Ministry of Public Works, orders have been issued by the government to take into serious consideration the project of M. de Lesseps for an Indo-Russian Railway. Accordingly, a committee is being formed of the most competent men of all the departments to study the project, after which a second committee will be appointed to examine the terrain and decide as to the direction in which the line is to be definitely carried.

We trust that the Russian Ministry of public works will do much more than "take into serious consideration," the project of the Lessep's Indo-European Railway. Railways will do more than almost any other material enterprise to prevent the great European rivals in Asia from attempting to "subjugate each other," as well as to develop the enormous resources of India, to enrich its vast population, and to draw within the busy circle of the world's activity and industries, countries whose vast productive capacity is now drawn upon only to a very limited extent.

Our readers will be glad to learn that the grievance of exorbitant rates on messages resulting from the consolidation of the trans-atlantic cable companies is working out its own cure by stimulating competition. The report of the Direct United States Cable Company, submitted on the 31st ult., states that 1535 nautical miles of cable have been manufactured, and landing places in Newfoundland, Nova Scotia and New Hampshire, in the United States, and a locality for the shore end in Ireland, have been selected. If further appears from the report that the new steamer Faraday, 5000 tons burthen, built for the contractors, will be moored off Messrs. Siemens' works, at Woolwich, England, on the 15th of this month, for the reception of the cable. The subscribed capital of the company is £1,300,000, of which £1,056,521 is paid up.

Labor Troubles in Pennsylvania.

The following comes by telegraph:

POTTSVILLE, PA., April 14.

The probabilities of a rupture between the workers and manufacturers in the Schuylkill and Lehigh iron regions are increasing. The trade at this time is excessively dull, yet the men are demanding an increase of wages. During the last few days general meetings of the iron workers or the societies of the National Puddlers' Union have been held in the principal cities, and have, in nearly every instance, been conducted in secret. The result of the national meeting which took place at Reading a few days ago, and in which 120 works were represented by delegates, is of the greatest importance, inasmuch as it forecasts a general "stand-out" in the producing trade.

A large number of the leading producers have determined to close operations, some even going so far as to declare an intention of suspending for the entire year. The following establishments are already suspended: Pennsylvania Iron Company, Danville, employing 2000 men; the Duncanon Mill, situated in Cambria County; the Cambria Iron Works, at Johnstown, employing 4000 men; The Susquehanna Rolling Mill at Columbia; C. E. Pennock's Rolling Mill, at Coatsville; the great Crane Works, at Catasauqua; the Reading Hardware Company, Seyfert McManus & Co., Reading, and a number of others. Fully 12,000 men are idle. There are now fifty-three furnaces out of blast in the State, and, as an extensive manufacturer asserted the other day, by the 1st of July there will not be a single forge in operation.

The Late James Bogardus.

Mr. James Bogardus, the eminent inventor, whose name will long be remembered in connection with the first introduction of iron as a material for the fronts of buildings, died at his residence in this city on the 13th instant. He was born at Catskill, N. Y., on the 14th of March, 1800. In his early youth he came to New York, and has resided here ever since. Unlike most men of science, Mr. Bogardus realized in his lifetime a fortune from his various inventions. The first of these was an eight-day three-wheel chronometer clock, receiving the highest premium from the American Institute. His next invention was an eight-day clock, with three wheels and a segment of a wheel, which struck the hours, and, without dial wheels, marked the hours, minutes and seconds. In 1828 he invented the "ring-flyer" for cotton spinning, now in general use. In 1829, he invented the eccentric mill, the grinding stones or plates of which, running the same way with nearly equal speed has superseded all other mills in the large sugar establishments of the United States for grinding sugar. In 1831 he invented an engraving machine, which cut the steel die for the first gold medal of the American Institute, and many beautiful medallions and also imitation filagree work on watch dials, with rays from the center and the figures in relief, all by one operation. About this time he invented the transfer machine for producing bank note plates from separate dies, now in general use. In 1832 he obtained a patent for the first dry gas meter, much improved two years afterward by giving a rotary motion to the machinery, thus making it applicable to all current fluids. This was the parent of all diaphragm metres, the word having been first so used by Mr. Bogardus. In 1833 he invented and patented the first pencil case without a slot. Mr. Bogardus being in England in 1836, and noticing in the newspapers a challenge to produce an engraving from the head of Ariadne (a medal in very high relief), he accepted it, and produced a medallic engraving machine, which not only made a perfect *fac simile* of the head of Ariadne, but from the same medal engraved comic distortions of the face. This machine engraved a portrait of Queen Victoria, dedicated to herself by her own request, one of Sir Robert Peel and several other distinguished personages. He contracted with a company in London to construct a machine for engine turning, which not only copied all kinds of machine engraving, but engraved what the machine could not again imitate; and a machine for transferring bank note plates and other work. In 1839 a reward was offered by the English government for the best plan of manufacturing postage stamps, and out of 2600 applicants his plan was adopted and a prize of £400 sterling was awarded to him. Vincent Nolte, author of "Fifty Years in Both Hemispheres," states that the Queen of England sent to Mr. Bogardus a like amount.

He now spent two years in France and Italy, and returned to New York in 1840. Here he invented a machine for pressing glass, another for shirring India rubber fabrics and for cutting India rubber in fine threads. He also made an important improvement in the drilling machine. The civil engineer, the Hon. William J. McAlpine, now in charge of the building of the new capital at Albany, expressed his obligations to Mr. Bogardus for suggestions in connection with drilling machines. In 1848 he invented a planetary horse-power, and a dynamometer for measuring the speed and power of machinery. He now put in execution his plan of iron buildings by constructing his own factory, at the corner of Center and Duane streets, five stories, 25 feet by 90, entirely of cast iron. This was the first complete cast iron building in the world. He erected many other iron buildings, in this city and throughout the country—Harper's building, in Pearl street; Tathem's iron building, in Beekman street; the building of the *Public Ledger*, in Philadelphia; the Baltimore *Sun* office; Adam's Express, Washington; Birch's building, in Chicago, and the immense iron building, Santa Catalina, in Havana. His pyrometer, which has never been described, is remarkable for delicacy and accuracy, simply breathing on the object, or a touch of the finger is instantly responded to by the dial pointer. Mr. Bogardus, by his genius and perseverance, has opened many new sources of industry and employment for thousands, and is justly regarded as a public benefactor. He was last engaged in the perfection of a machine for deep sea sounding, dispensing with a line and registering depths of ten or fifteen miles, as well as the temperature of the water.

Cheap Freight in the Southwest.

The Chattanooga *Daily Commercial* publishes the following important information:

The railroads centering in Chattanooga seem inclined to do what they can to facilitate the development of our iron and coal interests by putting their freights at a reasonable figure. A basis of freights has been submitted to them by some of our iron men, which some of the roads has adopted, while the others have expressed their willingness to do so as soon as it can be brought before them. This basis is fixed at the following rates:

Under fifty miles, 1½c. per ton per mile.
From 50 to 75 miles, 1¼c. " "
Seventy-five miles and over, 1c.

This applies to all the raw material going to blast furnaces and rolling mills, and also to all the products of the same, and extends through a period of ten years from the first of April of the present year. It also provides, where companies desire to furnish their own rolling stock, for a liberal reduction even from the above rates. The only changes in the price of freights that can occur in this period is contingent upon the increase or decrease in the standard price of pig iron. This insures to both producer and manufacturer, as well as to the railroad companies, an equilibrium which certainly must be satisfactory to all parties, and entirely dispenses with all which capitalists have heretofore made touching the question of high freights, and the impracticability of getting their goods to market. Furnaces located in Chattanooga can now get their ores delivered to them at cost for freights averaging from fifty cents to one dollar per ton, and coke and coal at from one to two cents per bushel; and taking the fact into consideration that each of the different railroads radiating from this point has special qualities of ores situated near its lines, embracing nearly all the different kinds and families of ores known to metallurgy, it is no longer an unsolved problem that the best grades of pig iron can be made here cheaper, probably, than any other point in the world.

Improved Car and Wagon Springs.

Mr. J. E. Jeffries, of Brooklyn, N. Y., has lately patented an improvement in the construction of compound elliptic springs—springs made in layers or leaves of sheet metal, such as are frequently used on vehicles of various kinds, and for other purposes. The invention consists in forming or upsetting on each leaf a rib, extending the length of the leaf, and provided in its middle with side enlargements, or a cross-rib. The shape in cross-section of the rib named is rounded off toward the top of the spring, and rounding also on the top of the rib; and when several leaves forming such ribs, all of equal size except as to length, are placed upon another, the ribs will, where they fit into each other, leave small concave-convex spaces between them; and if strain or pressure is applied to the spring, it will be in itself compressed by reducing the thickness of these said spaces. The spring is composed of six leaves, more or less, the lowermost leaf being the longest. The leaves are made of sheet metal of suitable thickness, and each one has a longitudinal rib formed on its upper surface, and a corresponding depression in the lower surface, by being upset between a suitable pair of dies. These dies are so shaped that on the lowermost leaf the rib will gradually vanish at or toward the ends; the next upper leaf being upset between the same pair of dies, will have its rib exactly like that of the corresponding length of the lower leaf, and so with each upper leaf, the ribs all being formed between the same pair of dies, and, therefore, equal in cross-section wherever they are above each other. In the center of each leaf the rib has lateral extensions, which fully appear in the construction, and which are all alike in all the several leaves. The clamping plates of the spring are provided with a longitudinal rib and with cross-ribs, the same as the leaves of the spring. It is claimed that a spring thus constructed, when it has several leaves superimposed, will be free to have vertical as well as lateral elasticity, as each lower leaf supports the one next above only with part of the side of the rib, leaving spaces between the upset parts of the leaves as well as between the flat parts thereof. When pressure or strain is applied to the spring, the upset parts of the leaves under such pressure or strain will become momentarily flattened out, thus causing the spring to have lateral elasticity, and not merely the longitudinal elasticity usually found in such springs. A spring thus made, it is claimed, will be better adapted to the purpose for which wagon springs are intended.

Prices in Philadelphia of No. 1 Anthracite Foundry Pig Iron, from 1842 to 1873.—Tons of 2240 lbs.

Compiled by WM. G. NEILSON for the American Iron and Steel Association.

Year.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Av'ge*	Year.
1842	.....	.....	.....	.....	27	27	26½	24½	25⅛	25	25	25	.....	1842
1844	24	24	24	24	24	26 1-6	26½	26½	27⅜	28	27½	26¼	25⅜	1844
1845	26¾	26⅜	27¾	35⅛	34⅜	33	31	28½	27	26⅞	28½	28	29⅝	1845
1846	28	28	28¾	28	28½	28	29	26½	27⅜	27	28¾	28½	27⅞	1846
1847	28⅜	28½	28⅝	29	29	28⅛	28	28⅝	30½	33⅛	35¼	33½	30⅝	1847
1848	31	28½	27¾	26⅝	26½	26⅛	25¼	25⅞	25½	25	25	24⅞	26½	1848
1849	25	24¾	24¾	24	23½	23	†22¾	22½	21⅝	21½	20	21	†22½	1849
1850	21	21	20⅝	20⅞	20⅞	20 1-6	20	20⅝	21	21	21	21¾	20⅞	1850
1851	21½	22	22	22	21½	21⅛	21	21	21	21	21	21	21⅛	1851
1852	21⅜	21¼	20¾	20¾	20¼	20½	20⅜	21⅛	23⅜	26½	27¾	28⅝	22⅞	1852
1853	32⅜	36⅞	35⅝	35⅞	35⅞	36	36	36	36½	37⅛	37⅝	36⅜	36⅛	1853
1854	37	36¼	37	38	38	38	38	38	37¾	36½	35½	32½	36⅞	1854
1855	31⅜	29½	27½	26¾	26⅝	26⅛	26⅛	26⅝	28	28⅝	28⅝	27¾	27¼	1855
1856	27⅛	27⅛	27⅝	28	28	27⅝	27	27	27	26⅞	26	26	27⅛	1856
1857	26¾	26⅛	26⅜	27⅝	27⅞	27¾	27⅝	26¾	26⅜	25¾	23½	23¼	26⅞	1857
1858	23½	22½	22½	22½	22½	22⅛	21⅞	21½	22	21½	21¾	22½	22⅛	1858
1859	22¾	24⅝	24½	23⅞	23½	23⅛	23	23⅛	22⅞	23¼	23¾	23⅛	23⅞	1859
1860	23	23	23⅜	22⅞	22¼	22⅜	22½	22⅛	22½	22⅜	22¼	22¾	22¼	1860
1861	22⅛	21¾	21⅛	21⅞	21⅛	20½	19⅞	18¾	18¾	‡18⅝	18⅞	19⅝	‖20⅛	1861
1862	20	20⅜	20⅜	21½	21½	22⅜	24	24¼	24½	25⅛	30½	31⅛	23⅞	1862
1863	32	33⅛	35½	36	34⅝	33½	32⅜	31⅜	33	35¾	41½	43½	35¼	1863
1864	43 1-6	48⅝	50⅛	54⅛	57¼	57⅝	69⅛	§73⅝	72⅝	63¾	61½	59⅛	¶59¾	1864
1865	58⅛	53⅛	50⅜	45½	39⅛	35	35⅜	40⅛	44½	49⅞	51	50⅛	46⅛	1865
1866	50⅜	49	46½	41¾	41⅜	43⅞	46½	47⅜	48⅛	48¾	49⅛	49⅛	46⅞	1866
1867	48⅜	46⅝	44⅜	41	42¾	43	43⅛	44	44⅛	44½	43⅜	42½	44⅛	1867
1868	38⅝	36¾	37⅞	38⅛	37	37	38 1-6	39⅝	40 1-6	41⅝	42⅞	43¼	39¾	1868
1869	42	40⅛	41⅜	40	39⅝	40⅞	41⅝	41⅛	40¾	40½	39⅜	39½	40⅝	1869
1870	36⅛	34½	34¾	33⅛	33¼	32⅞	32⅜	33⅛	33⅛	32⅝	31¾	31⅝	33⅛	1870
1871	30⅛	30⅞	34⅛	35⅛	35⅝	35	35¼	36	36⅛	36⅞	37⅝	37⅛	35⅛	1871
1872	37	40¾	47	49½	49⅜	53⅜	51½	52¾	53⅞	53⅛	51¾	47⅛	48⅞	1872
1873	45 1-6	48	48⅜	47¾	46	45	43½	43½	42½	38	33	32½	42⅝	1873

*Average for year to nearest *eighth*. †Uncertain.
‡Lowest average for month, $18⅝—October, 1861. ‖Lowest average for year, $20⅛—1861.
§Highest average for month, 73⅝—August, 1864. ¶Highest average for year, 59¾—1864.
From 1842 to July, 1866, averaged monthly from weekly quotations in Philadelphia and New York prices current. From July, 1866, to 1873, averaged from weekly quotations in Bulletin of the American Iron and Steel Association.

Prices of American Iron Railroad Bars in Philadelphia for Twenty-six Years, from 1847 to 1873.—Tons of 2240 lbs.

Compiled by WM. G. NEILSON for the American Iron and Steel Association.

Year.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Av'ge	Av'ge price of Gold.
1847	.....	71⅔	70⅛	70	70	70	69⅛	69½	67½	67	67½	67½	.....	100
1848	63	63	63	63	63	63	63	61⅞	61⅓	61	61	61	62⅛	100
1849	61	57½	53¾	53⅓	54⅓	53½	53⅜	53⅛	52	51½	51½	51½	53⅞	100
1850	47	47½	48	49	49	50	46	46¼	47½	48	48	†48	†47⅞	100
1851	43	†45	47½	45	45	48	46	45⅛	45	45	46	†46¼	†45⅝	100
1852	46½	46½	46½	46½	46½	46½	46½	46½	47¾	49½	51	61	48⅜	100
1853	74 1-6	77½	77½	77⅜	77⅜	77⅜	77½	77⅜	77⅜	77⅜	77½	77⅜	77⅜	100
1854	81	81	81	81	81	81	81	81	81	81	77⅜	73½	80⅛	100
1855	70	65	62⅝	62½	60	58½	59⅝	59½	64⅝	65	65	63	62⅞	100
1856	62½	62½	63⅞	65	65	65	65	65	65	65	65	64	64⅜	100
1857	65½	65⅜	64⅜	65¾	67	67	67	67	67	67	58½	50	64⅜	100
1858	50	50	50	50	50	50	50	50	50	50	50	50	50	100
1859	49¾	49¼	49¾	50 1-6	50¾	50¾	49¾	48¾	48¼	48¼	48¾	48¾	49⅞	100
1860	48¼	48¾	48¾	48¾	48¾	48¾	48¾	46	47	47½	47½	46¼	48	100
1861	44	44	44	44	44	44	44	43 1-6	43	41¾	‡36½	‡36½	42⅝	100
1862	‡36½	‡36½	41⅜	41½	41½	41½	41½	41½	43	43¼	46	46	‖41¾	113
1863	72½	69¾	72¾	73½	73½	78¾	81½	73⅞	72½	79⅜	87½	87½	76⅞	145
1864	94	101¾	105	111	120	127½	141½	152½	§153¾	140	133¾	132	¶126	202
1865	125⅝	121¾	116¼	108¼	90¾	84¼	82½	86¾	90	92½	95	91	98⅝	157
1866	90	90	87¾	84¾	84	85¼	86⅞	87	87⅝	87⅝	85	85	86¾	140
1867	85	85	84¼	82⅞	82½	82½	82½	82½	82½	82½	82½	82½	83⅛	138
1868	81⅝	79	79	79	79	79	79	79	79	78¼	76	78¼	78⅞	140
1869	76¾	76	76	76	76	76	76	80	78⅝	78½	78⅜	78½	77¾	136
1870	74	72½	72⅝	72½	72½	72½	72⅝	72½	72½	72½	70½	70	72⅛	115
1871	68¾	69	69	69½	71	71	71	71	71	71	71	71	70⅜	112
1872	71½	75⅝	81½	83⅞	90½	90	89	87¾	88¾	88¾	88¾	85⅛	85⅝	112
1873	83½	83	83	82	80	78	76	75	75	70	61	61	75⅝	112

From 1847 to 1866 from Philadelphia Prices Current, except for years 1850 and 1851, for which estimates were furnished by Mr. S. J. Reeves. From 1866 to 1873 from Bulletin of the American Iron and Steel Association, averaged from weekly quotations.
Prices averaged for years to nearest *eighth*.
* For latter part of 1857 prices were probably only nominal. † Uncertain.
‡ Lowest months, $36½—November and December, 1861. ‖ Lowest year, $41¾—1862.
§ Highest month, $153¾—September, 1864. ¶ Highest year, $126—1864.
The annual premium on gold is calculated from daily quotations of gold sales in the *Banker's Magazine*.

PHILADELPHIA CORRESPONDENCE.

PHILADELPHIA, April 13, 1874.

Everyone is still on the anxious seat for some final action by Congress relative to the currency, and all business enterprises are in abeyance until the result is known. The majority of our manufacturers are undeniably in favor of the measure adopted by the Senate, styled by its enemies "ultra-inflation." Whatever it may be termed, it is believed it will give us a demand for goods at decent prices, which will enable manufacturers to pay fair wages, and thus put a stop to the expensive and injurious labor troubles now existing. So many plans are awaiting this settlement by Congress of our money troubles, that it is highly probable a sudden and active demand will advance prices. In the iron trade many are discounting this, and furnaces and mills now idle are preparing to resume. The Cambria Works are reported to have resumed with full force in the Bessemer department, and partially in one of the iron rail mills. The miners are still out and the puddlers idle. A general review of the trade shows the locomotive and car works beginning to be busy on orders which promise work for some months, the bar mills with fair orders, and the furnace companies with more inquiry for metal, based on the belief that iron is as low as it will or can go. The steel trade has been busy for some time, and at prices which are said to be satisfactory. From all accounts a very active summer trade is expected to follow the settlement of the currency question, and a belief so generally accepted is rarely without foundation. The iron trade—or, rather, the method of producing iron—is apparently on the eve of some great and radical changes. A glance at the numerous new and startling processes offering, both abroad and in this country, shows that the bent of inventive genius in this line is turned toward radical innovations on present processes, if not an almost total departure from the previously accepted theories and practice of production. Thus, we find a process in England of simplifying puddling by the use of a mixture of iron coke, so-called, which consists of iron ore mixed with carbon in the shape of gas tar, and by which the iron is rapidly reduced in the puddling furnace, only requiring the labor of "balling" by the puddler, and avoiding entirely the elimination of surplus carbon by boiling and rabbling. This meets with very marked favor from practical English iron masters, and is certainly a radical departure from the previous form of puddling. In France a process for producing alloys of manganese, titanium, silicon or tungsten with iron, by means of using a combination of the ores of these metals, or metalloids, with granulated iron, borings or sponges, which is wetted with acidulated water, and on being compressed in molds, becomes so hard as to resist the disintegrating heat of the furnace below the temperature of fusion of pig metal. This offers a radical change in the manufacture of spiegel, titaniferous irons and steels, silicon steel and tungsten steel. In this country a host of inventors are busily engaged in processes for utilizing waste ores and magnetic sands, and of decarbonizing pig metal at its egress from the blast furnace. Cheap and practical application of gas heats are also attracting great attention, and one inventor, Prof. Lowe, has applied a gas fuel to the blast furnace with a claim for very great economy. The processes described and illustrated from time to time in your columns show the extent to which men's minds are attracted to these subjects. The gas producing and utilizing rotary puddling furnace, illustrated in your last, and invented by William Sellers, Esq., of this city, is an evidence of this progress, and the machine, although apparently complex in design, would, it is evident, prove thoroughly practical and economical in working. Nor are the existing methods without their advancement. The introduction here of the Whitwell Hot Blast Stove, within the past year, has been extraordinarily rapid for a foreign invention compelled to encounter the prejudice against new hot blasts. Many of the best new furnaces are adopting this stove, both East and West, and its results in increasing the product of charcoal furnaces on the Continent has been simply marvelous. The application of two of these stoves of small size to a charcoal furnace at Weilerback, Prussia, have been followed by an economy of 15/ per ton of pig produced and the possibility of using cheaper ores. Moreover, so fluid is the iron, from the increased temperature of the blast, that remarkably fine castings are made direct from the blast furnace. A sample before me of a section of some ornamental open work, similar to stove ornamentation, and which was cast in a complete cylinder, the design being an ornamental crown of open work and of some two feet diameter, presents the appearance of the finest gray iron casting, perfectly smooth and solid, although cast in the ordinary sand. Such results are certainly steps of progress, and serve to show the activity of inventive genius when spurred by competition.

It is now many years since the last great innovation in iron making, the discovery of the Bessemer process, was made, and while numerous steps of progress in other directions have been made, it would seem highly probable that the current or coming year may give us another and even more radical departure from previous practice in iron making.

City gossip has been unusually dull for the week past. The annual meeting of the stockholders of the American line of steamships was held, and the report shows an amount of receipts of $577,692·02, and of expenses of $524,372·27, leaving an excess of receipts of $53,319·75. The greater portion of this was expended in necessary expenses in starting a new line, wharf improvements, etc. The steamers of the line are doing a good and growing business, and the prospects of the successful establishment of a large American line of steamers from this port are highly encouraging. The damage to the *Pennsylvania* has been repaired, and she has sailed again on her regular line uty.

The subscriptions to the Centennial continue to come in freely, and with additions from outside places, and especially from associations of mechanics, showing an interest in the scheme among the working classes. The prospects of a national appropriation are also improving.

The first official survey of the Girard Avenue bridge, previously noted in my letters as nearly completed, has been made, and it is said the bridge can be formally opened by July 1st.

In the list of weekly exports from this port for last week I find the following significant item: Bar Iron, 54,170 lbs., but whether to Liverpool is not stated. Locomotives to the amount of $38,000 and other iron manufactures to a value of $10,800 are included in the list, while coal to the amount of 2100 to re also noted. Thus are our iron exports slowly creeping up; coal is taking its place also in the reports, and before the resumption of specie payments in this country it will be seen that the exports of these sources of wealth will have had more to do with that consummation than all the legislation and financial theories of New England.

A number of new manufacturing enterprises in and near the city are projected, and await the return of business for active action. A liberal spirit is shown in offers of land free to manufacturing companies in our near-by towns, and the coming summer will doubtless see a very considerable addition to the manufactures of Eastern Pennsylvania.

Railway Construction.

The Philadelphia *North American* says:

There is a little railroad activity perceptible over the country that seems to promise more in all sections. California has projected a narrow gauge railroad, eighty miles long, from Plumas county in the northeast, adjoining Nevada, through the Sierra Valley and along the eastern slope of the Sierra, to Truckee and the Central Road. In Texas, the Galveston and San Antonio Road, constructed through Harrisburg and Richmond to Columbus, has been placed under contract to the San Marcos River, and graded to within fifteen miles. It is to be actively prosecuted this season, with a hope of reaching Gonzales, on the Guadalupe—intermediate between Columbus and San Antonio. The road from Corpus Christi to the Rio Grande at Laredo, 150 miles, is also to be commenced at once. South Carolina expects soon to organize a company for extending the Spartansburg and Columbia Road north to Ashville, N. C., where it joins the Morristown road from the Virginia and Tennessee. This road is surveyed north to the Knoxville branch in Kentucky, and thus reaches both Louisville and Cincinnati. The progress of the Cincinnati Southern has something to do with the activity shown. The same motive may have some influence on the extension of the Savannah and Memphis Road, that is said to have been arranged. In Tennessee the progress of the Cincinnati Southern is the assigned cause for a road from Sweetwater, on the Tennessee and Georgia, 45 miles southwest from Knoxville, to the Tellico Iron Works, in Monroe county, 25 miles, to be extended to the Southern at Rockford. The Southern is experiencing Hoosac fortune for a time in the great tunnel because the machinery has not arrived. The work is, nevertheless, progressing north from Chitwood, and is being pressed between Somerset and South Danville, with the expectation of completing it a year from July. In Virginia the Ohio and Chesapeake has arranged to build from Hanover Junction, 45 miles southeast to West Point, on York river; and the road already graded in the Shenandoah is to be ironed from the Potomac to Front Royal, and graded south. It has been surveyed through the whole valley across the Ohio and Chesapeake to Salem, on the Virginia and Tennessee. New Jersey has just completed a second track of 20 miles between Boonton and Passaic, on the Boonton branch of the Delaware and Lackawanna, and in this State the Hanover and York Road down Codorus Valley, 18 miles, is being constructed.

New England is doing little. A road 35 miles long is to be constructed between Manchester and Keene, on the Cheshire, where it reaches the Connecticut Valley Road. The West is almost as quiet. A narrow gauge road, 65 miles long, is to connect Wabasha, on the Mississippi, with Faribault, on the Milwaukee and Minnesota, by the Green Bay Company, in Minnesota. In Wisconsin a narrow gauge is being built from Toomah, on the West Wisconsin, to the Wisconsin River, as part of the Chicago and Toomah. The Wheeling and Lake Erie Road, in Ohio, has been commenced, and a short road to connect Cleveland with Euclid. The summary shows life and improvement of it; but much less activity than was noticeable a few ears since.

Trade Report.

Office of THE IRON AGE,
WEDNESDAY EVENING, April 15, 1874.

The chief topic of interest during the week has been the action of the House on the Senate bill providing for an increase of currency. As this bill has now passed the House, the probabilities are that the President will sign it; and while it contains some features which should be amended at the earliest moment, it is better than no action at all, and infinitely better than contraction. As the effect of an increase of currency upon prices is very fully discussed in our editorial columns, we need only say that it is regarded with approval by business men throughout the country, and will give general satisfaction in manufacturing districts. General business continues dull and depressed, and no great improvement can be looked for so long as the action of the President is uncertain. Money continues in good supply and limited demand, with rates for call loans at 4 @ 5 per cent. Commercial paper is quoted 5 @ 7 per cent.

The gold market has been steady and strong, advancing on Tuesday on strength of rumored complications between Washington and Madrid, which are serious enough to threaten a breach of peaceful relations. If the rumor has not yet been officially denied, it certainly lacks official confirmation. The following shows the daily range of the premium:

	Highest.	Lowest.
Thursday	113⅝	113⅜
Friday	113⅞	113⅝
Saturday	113⅝	113⅝
Monday	113⅞	113⅝
Tuesday	114⅛	113¾
Wednesday	114⅜	113⅝

The stock market has been unsettled and feverish, fluctuating between strength and weakness. The principal dealings have been in Western Union, Pacific Mail, Lake Shore, N. Y. Central, Union Pacific, Erie and Wabash. The highest and lowest of to-day's prices are given below.

The bond market continues strong for governments, and moderately strong for desirable investment securities. The closing prices for governments are given below.

The following shows the movements in foreign trade for the week:

IMPORTS.

	1872.	1873.	1874.
Total for week	$10,670,650	$6,271,358	$11,278,078
Prev. reported	112,353,304	120,908,613	110,396,414
Since Jan. 1	$123,023,934	$127,179,971	$121,674,492

Included in the imports of general merchandise for the week are:

	Quant.	Value.
Brass goods	18	$3,605
Bronzes	11	1,606
Chains and anchors	142	6,192
Copper		4,084
Cutlery	95	30,533
Gas fixtures	1	413
Guns	159	6,395
Hardware	69	10,169
Iron pig, tons	353	22,366
R. R. bars	3,777	70,416
Iron cotton ties	219	1,490
Iron, other, tons	195	16,468
Lead, pigs	7,465	47,675
Metal goods	127	17,009
Nails	6	759
Needles	13	7,782
Old metal		2,736
Per caps	13	1,733
Saddlery	14	2,651
Steel	1,490	16,914
Silverware	6	3,942
Tin, boxes	23,514	210,591
Tin, 9,279 slabs	739,647	176,913
Wire	47	4,334
Zinc	19,890	1,356

Government bonds closed heavy as follows:

	Bid.	Asked
U. S. Currency 6s	116¾	117¼
U. S. 6s 1881, reg	119¾	120
U. S. 6s. 1881, cou	121¾	121¾
U. S. 1862, 5-20 reg	114¾	115¼
U. S. 5-20 1862, cou	118¾	119
U. S. 5-20 1864, reg	116¼	116½
U. S. 5-20 1864, cou	120	120¼
U. S. 5-20 1865, reg	116¼	116¾
U. S. 5-20 1865, cou	121¾	121½
U. S. 5-20 1865, reg. new	119	119½
U. S. 5-20 1865, cou	119¾	119¾
U. S. 5-20 1867, reg	119¾	120
U. S. 5-20 1867, cou	120¾	120¼
U. S. 5-20 1868, reg	119¾	120
U. S. 5-20 1868, cou	120	120¼
U. S. 10-40 reg	114¾	115
U. S. 10-40 cou	114¾	115
U. S. 5s 1881 reg	115 x in.	115¼
U. S. 5s, 1881 cou	116¾	116¾

The following were the highest and lowest prices of stocks to-day:

	Highest.	Lowest.
N. Y. Cen. & Hudson Consolidated	99⅜	98⅛
Lake Shore	75⅞	74⅝
Rock Island	101⅜	100⅝
Del. Lack. and Western	107⅛	106⅝
Wabash	45¼	44⅛
Western Union Telegraph	77⅛	75⅝
Northwestern	54	52¾
do. Preferred	70¾	69⅝
Milwaukee & St. Paul	42⅜	41⅛
do. do. Preferred	60⅜	60
Pacific Mail	47⅜	45⅝
Erie	37⅜	36⅞
Ohio & Mississippi	29⅜	29⅛
Union Pacific	36⅞	35⅝
C. C. & Ind. Central	32⅛	31¾
Atlantic & Pacific Preferred	15⅜	15⅞
Hannibal and St. Joseph	32¼	31¾

GENERAL HARDWARE.

Of the general features of trade there is little to say. The ordinary business of the season is going on quietly, and few changes in prices are taking place. The Wringer combination has been broken, and these goods are now offered at irregular prices. Efforts to make a new arrangement have not been given up, but have as yet met with no success. Some of the trade in Philadelphia have been amusing themselves by a cut in Strap and T Hinges, which they have been selling at low prices. The fight has been entirely local, and we cannot learn of its having any effect in this market.

A meeting of the stockholders of Landers, Frary & Clark, to consider the question of rebuilding the Ætna Works, lately destroyed by fire, was held this (Wednesday) afternoon at New Britain, Conn., the matter having been referred to them by the directors. After full discussion, it was voted by a large majority to rebuild at once. The officers have been engaged since the fire in perfecting plans, and will now move with the greatest activity. They declare without hesitation that they will be ready for the early fall trade, and that all contracts will be let with forfeits heavy enough to secure this result beyond question.

The Russell & Erwin Mfg. Co. announce the following changes in the list prices of their Real Compression Bronze Goods, as they will appear in their new list now in press.

Door Knobs.

No.	₱ pair.	No.	₱ pair.	No.	₱ pair.
20	$6·00	28	$6·00	34	$5·00
21	6·00	30	5·00	38	5·00
22	6·50	31	5·00	923	2·50
23	6·00	32	5·50	933	2·00
24	6·00	33	5·00		

Bell Pulls.

No.	Each.	No.	Each.	No.	Each.
18½	$4·50	25	$4·50	31	$2·50
19	4·50	26	4·50	33	2·50
20	4·00	27	4·50	53	2·50
21	4·00	28	5·00	34	3·00
22	4·00	28½	5·00	933	1·75
23	4·00	29	3·00		
24	4·50	30	2·50		

Bell Levers.

No. 50 ..... $2·50, each.

Knobs and Cranks.

No.	₱ pair.	No.	₱ pair.	No.	₱ pair.
70	$4·50	419	$5·00	719	$1·50

Escutcheons.

No.	Each.	No.	Each.	No.	Each.
70	$1·00	542	$1·50	714	$ ·30
71	1·00	543	1·00	916	·15
72	1·00	544	1·00	913	·35
73	·20	548	1·00	914	·35
74	·20	549	1·00	970	·25
500	1·25	550	1·50	971	·25
522	2·00	713	·30	1777	3·00

Fancy Front Locks.

No.	₱ set.	No.	Each.	No.	Each.
332	$16·00	736	$3·00	757	$9·00
	Each.	737	4·00	762, Brass	1·50
700	4·00	744½	·75	762, Bronze	2·00
707½	2·75	746	3·00	763	2·50
719	3·00	751	6 00	925	3·50
733	2·00	753	6·00	932	9·00
734	2·25	754	6·00	978	1·50
735	2·50	756	5·00		

Shutter Knobs.

No.	₱ doz.	No.	₱ doz.	No.	₱ doz.
9	$1·75	12	$6·00	33	$2·50
11	6·00	13	6·00		

Shutter Bars.

No.	11	15	16	20	21
Per dozen	$2·50	6·50	5·00	3·00	4·00

Sash Lifts.

No.	9	11
Per dozen	$3·50	4·00

Sash Fasteners.

No.	718	719
Per dozen	$13·50	12·00

Drawer Pulls.

No.	28	29
Per dozen	$3·50	3·50

Letter Plates.

No.	1	3
Per dozen	$10·00	9·00

Discount 10 per cent.

Store Door Handles.

No. 700, Single Handle, Lift Latch ... per doz., $48·00
Per set.
No. 701, Single Handle, with Fancy Front, Mortise Latch No. 747¾ ... $4·50
No. 1701, Single Handle, with Fancy Front, Mortise Latch No. 747½ ... 4·50
No. 2702, Single Handle, with Fancy Front, Mortise Latch No. 747¾ ... 4·75
No. 702, Double Handle, with Fancy Front, Mortise Latch No. 747¾ ... 7·50
No. 1702, Double Handle, with Fancy Front, Mortise Latch No. 747½ ... 7·50
No. 2702, Double Handle, with Fancy Front, Mortise Latch No. 747¾ ... 7·75
No. 705, Single Handle, Lift Latch ... per doz., 26·00
Per set.
No. 706, Single Handle, with Fancy Front, Mortise Latch No. 747¾ ... 3·00
No. 1706, Single Handle, with Fancy Front, Mortise Latch No. 747½ ... 3·00
No. 2706, Single Handle, with Fancy Front, Mortise Latch No. 747¾ ... 3·50
No. 707, Double Handle, with Fancy Front, Mortise Latch No. 747¾ ... 4·50
No. 1707, Double Handle, with Fancy Front, Mortise Latch No. 747½ ... 4·50
No. 2707, Double Handle, with Fancy Front, Mortise Latch No. 747¾ ... 4·75
Discount 10&10 per cent.

Trade in Foreign Hardware continues in the dull and unsatisfactory condition noted for several weeks. There are no changes in price to report, although there is little doubt that buyers for large lots of heavy goods could obtain concessions from our quotations. In the absence of transactions better figures are not named.

The demand for Nails continues fair, and some of the Eastern Mills report orders on hand sufficient to keep them busy during the whole of next month. Prices are, however, if anything, weaker than the previous week, although we continue to quote $4, net, for 10d, which is the regular asking price for large or small lots; as we remarked before, this figure would be shaded for a fair order. Orders for future delivery are positively declined at the present ruling rates, and are only accepted at prices ruling time of shipment.

The demand for House Furnishing Goods, Tinners' Trimmings, &c., falls short of the general anticipations of the trade, although some fair orders for seasonable goods have been placed during the last few days. Prices of Stamped and Japanned Tin Ware are somewhat irregular, although makers have not altered their quotations. We quote 9 inch Pie Plates at $6·00, 4 and 6 quart Bucket Covers at $4·85 and $6·00, per gross, net; No. 1 Japanned Candlesticks at $6·50 and No. 2 $6·00 per gross, net; Round Cake Boxes (nests of three), $2·70 per nest. These are special figures for quantity. The Brass Manufacturers Association held a meeting in this city to-day. The meeting had not adjourned at the close of business, and at the time of going to press the result of their deliberation has not reached this office. The prevailing impression in the trade tends to a decline in prices.

The importers of French Window Glass report a slight improvement in the demand. The new scale of prices published in these columns last week are well sustained, and the discount, viz., 50&10 and 5 per cent. is the regular ruling rate. For large orders, however, an extra discount is allowed.

We have received the following circular, dated March 31st, giving new prices for the goods made by Lewis, Oliver & Phillips. They call special attention to the reduction in price of their Bridge and Roof Bolts, which are made from iron rolled expressly for the purpose, all in whole lengths, no welds. They also call attention to the prices of their new size Box Strap Bolts. We make the following extract from their circular:

"We have also reduced the price of our Carriage, Tire, Plow and Machine Bolts, Coach and Lag Screws, Skein Bolts, Nuts, Washers, Screw Hook and Eye, Screw Hook and Strap and Strap and T Hinges, Bridge Bolts, Wagon Hardware, etc. To encourage jobbers of Iron and Hardware to keep a stock of our Iron Fence Pickets on hand, and increase the already extraordinary demand for them, we have adopted very favorable discounts to the trade, and which we will only allow to persons who buy to sell again. Our stock of Merchant Bar Iron in store is very complete, and as our daily product exceeds one hundred tons, we can fill the largest orders with promptness and dispatch. Our stocks of all specialties is well assorted, and we hope to have your orders."

The following are their new quotations:

Iron, standard list, assorted sizes, for large orders, 2c, card rate, 2 % off net.
Flat Rail (1¼x¼), punched and coun'sunk .. 4·7c ₱ ℔ net
Iron Wedges ... 4¾c ₱ ℔ net
Norway Nail Rods ... 9½c ₱ ℔ net
Crow Bars (in ordering please state whether "Wedge" or "Pinch" point) ... 5½c ₱ ℔ net
Beetle Rings ... 9½c ₱ ℔ net
Fence Pickets—
⅜ round, bent to shape 30c ₱ ft. of fence, less 15 % off net.
Discount off Standard List.
Carriage and Tire Bolts (new list) ... 70&5 % off net
Plow Bolts ... 30&10 % off net
Stove Bolts ... 10 % off net
Machine and Square Head Bolts ... 30&5 % off net
Coach and Lag Screws ... 30&5 % off net
Bolt Ends ... 30 % off net
Pat. Hot Pressed Square and Hexagon Nuts, small sizes, from 3-16 to ⅜ in ... 7 c ₱ ℔ off net
Pat. Hot Pressed Square and Hexagon Nuts, large sizes, from 7-16 to 2 in ... 5½c ₱ ℔ off net
Washers, all made from new band iron, small sizes, from 3-16 to ⅜ in ... 8 c ₱ ℔ off net
Washers, all made from new band iron, large sizes, from 7-16 to 1⅜ in ... 6 c ₱ ℔ off net
Nuts and Washers in 25 lb. boxes, 1c ₱ ℔ ex. Nuts and Washers in lots less than one keg each size, 1c ₱ ℔ ex. Nuts and Washers in 5 lb. boxes, 1½c. ₱ ℔ ex.
Harrow Teeth, in lots of 1 ton or more, packed in casks, 1 in. diam. 3¼c ₱ ℔ net; ⅞ in. diam. 3¼c ₱ ℔ net; ¾ in. diam. 4¼c ₱ ℔ net.
Patent Headed Harrow Teeth, packed in casks, ¾c ₱ ℔ ex
Skein Bolts, in bulk, in lots of 1 keg or more, ⅝ in. diam. 6c ₱ ℔ net; 9-16 in. diam. 7c ₱ ℔ net; ½ in. diam. 8c ₱ ℔ net. 1c ₱ ℔ extra when less than 1 keg of each size is ordered.
Screw Hook-and-Eye Hinges, ¾ to 1 in. diam. 9c ₱ ℔ net; ⅝ in. diam. 10c ₱ ℔ net; ½ in. diam. 12 c ₱ ℔ net.
Screw and Strap Hinges, in lots of 100 pairs or more, ¼ to ⅜ in. long, 5½c ₱ ℔ net; ⅝ to 1 & 12 in. long, 7c ₱ ℔ net.
Strap and T Hinges, .25 & 7½ % off net, delivery as customary.
Screw Hitching Rings ... $5 50 ₱ 100 net
Dutch Nest Tuyere Irons ... $15 00 ₱ doz net
Cast Iron Washers ... ₱ ℔ 4½c net
Bridge and Roof Bolts—
1 to 2 in. diam. over 8 ft. long ... ₱ ℔ 4¼c net
1 to 2 in. diam. from 4 to 8 ft. long ... " 4¼c net
1 to 2 in. diam. from 1¾ to 4 ft. long ... " 5c net
⅞, ¾ and ⅝ in. diam. over 4 ft. long ... " 5¼c net
⅞, ¾ and ⅝ in. diam. from 1½ to 4 ft. long " 5¾c net

WAGON HARDWARE.

Wagon Box Strap Bolts—
10 in. long by 7-16 at Screw End, ₱ set of 8 bolts .. 55c
12 " ½ " " 8 " .. 70c
10 " 9-16 " " 8 " .. } 90c
12 " 9-16 " " 8 " .. }
14 " 9-16 " " 8 " .. $1 00
10 " ⅝ " " 8 " .. } 1 00
12 " ⅝ " " 8 " .. }
14 " ⅝ " " 8 " .. 1 10
16 " ⅝ " " 8 " .. 1 20
5c ₱ set for each additional inch over 14 in. All lengths made.
In ordering Box Strap Bolts please give diameter at Screw End.
Wagon Box Rods, narrow track, each ... 18c
" " wide track, each ... 20c
Single Tree Irons, ₱ set of four pieces ... 38c
Wrought Iron Bolster Plates, 2¾ in. wide, ₱ set ... 60c
" " 3 " " ... 65c
" " 3¼ " " ... 70c
" " 3½ " " ... 75c
Wagon Brake Ratchets, each ... 16½c
" " finished with guard, each .. 45 c
Wrought Hammer Straps, heavy pattern, each ... 16 c
" " light " each ... 13½c
" Rub Irons, each ... 11 c
Stay Chain Hooks, each ... 8 c
Double and Single Tree Clips, figure 1, each ... 9 c
" " " 2, each ... 10 c
" " " 3, each ... 12 c
Strap Bolts, Rods, Single Tree Irons, Bolster Plates, Brake Ratchets, Hammer Straps, Rub Irons, Stay Chain Hooks and Clips, in lots of 100 sets ... dis 25 %
Wagon Box Staples, 1½ to 2¾ in. to clinch, ₱ 1000 $12 00 net
" " Box Iron, to rivet on, ₱ 1000 8 00 net
Neck Yoke Eyes, each ... 5c net
" " with ⅝ rings, each ... 7½c net
King Bolts, ⅝, 1, 1¼, and 1½ in. diam ... ₱ ℔ 4½c net
Wagon Rivets, ex. large, flat, oval and steeple head, ¼ in. diam. all lengths ... " 9 c net
Wagon Rivets, 5-16 in. diam., all lengths ... " 11 c net
" " & Nails, in 5 ₱ paper boxes ... ₱ ℔ 1c extra
" " in 25 ₱ wood " ... " ½c extra
Wagon and Hinge Nails, ¼ in ... ₱ ℔ 17 c net
" " " 5-16 in ... " 19 c net
Double Tree Plates ... } " 9 c net
Coupling " ... }
Tongue " ... }
Neck Yoke Plates ... " 12 c net
Tongue Cap Iron, 1¾, 2 & 2¼ in. wide, same price ₱ ℔ as Band Iron.
Wagon Chains, Stay Lock and Tongue, 5-16 in, ₱ ℔ 11 c net ¼ in., 12 c. net

Russell & Erwin Mfg. Co. are introducing a new patent Adjustable Malleable Iron Clamp, which, it is claimed, cannot get out of order. By turning the bolt one quarter turn to the left, it can be moved its full length out or in; when turning it to the right, it operates like any other screw. The following are the prices at which it is sold, less a discount of 10 per cent.:

3 inch ... per doz., $4·50
4 " ... " 6·50
5 " ... " 7·50
6 " ... " 9·00
8 " ... " 11·50

We publish below the list for Blood's Scythes, which is subject to a discount of $1 per dozen. Graham & Haines are agents for these well known goods.

All Scythes Stamped I. Blood are "Cast Steel Backs."

	Per doz.
Blood's Champion Grass Scythes, German Steel, beaded, painted	$10·00
Blood's Champion Grass Scythes, German Steel, half set, oiled or painted	10·00
Blood's Champion Grass Scythes, German Steel, full set, oiled or painted	10·00
Blood's Champion Grass Scythes, German Steel, waldron, oiled or painted	10·00
Blood's Champion Grass Scythes, Cast Steel, half set, oiled or painted	11·00
Blood's Champion Grass Scythes, Cast Steel, full set, oiled or painted	11·00
Blood's Champion Grass Scythes, Cast Steel, waldron, oiled or painted	11·00
Blood's Champion Grass Scythes, Silver Steel, half set, oiled or painted	12·00
Blood's Champion Grass Scythes, Silver Steel, mirror, oiled or painted	12·00
Blood's Champion Grass Scythes, Silver Steel, waldron, oiled or painted	12·00
Blood's Champion Grass Scythes, Silver Steel, Red Rover, painted	13·00
Blood's Champion Grain Scythes, German Steel, beaded, painted	14·00
Blood's Champion Grain Scythes, German Steel, full set, oiled or painted	14·00
Blood's Champion Grain Scythes, German Steel, waldron, oiled or painted	14·00
Blood's Champion Grain Scythes, Cast Steel, full set, oiled or painted	15·00
Blood's Champion Grain Scythes, Cast Steel, waldron, oiled or painted	15·00
Blood's Champion Lawn Scythes, German Steel, waldron, oiled or painted	10·00
Blood's Champion Lawn Scythes, Cast Steel, waldron, oiled or painted	11·00
Blood's Champion Bush Scythes, German Steel, beaded, painted	11·00
Blood's Champion Bramble Scythes, German Steel, half set, painted	11·00
Blood's Silver Clipper Grass, extra fine, Gold Bronze, sharp, in 1 dozen boxes	14·00
Blood's Silver Clipper Grass, extra fine, Gold bronze, sharp, in straw bundles	13·50
Blood's Young America, Grass, extra fine, Copper Bronze, sharp, in 1 dozen boxes	11·00
Blood's Young America, Grass, extra fine, Copper Bronze, sharp, in straw bundles	10·50

Blood's Grass, Grain or Lawn Scythes Bronzed in Gold or Copper at 25 cents per dozen, extra.

The following is Frost, Derby & Co.'s list for Scythe Snaths, which is subject to a discount of 25 per cent.; Graham & Haines, agents:

No.				Per doz.
1,	Patent Loop Snath,	Brass Trimmed,	Heavy	$10·00
2,	" "	Iron "	"	9·25
1,	" "	Brass "	Medium	10·00
2,	" "	Iron "	"	9·25
1,	Ring Snath, Z Plate,	Brass "	Heavy	9·00
2,	" "	Iron "	"	8·25
1,	" Solid Plate,	Iron Trimmed,	Heavy	9·00
1,	" Patent Socket,	Brass Trim'd	Heavy	8·50
2,	" "	Iron "	"	7·50
1,	" "	Brass "	Medium	8·50
2,	" "	Iron "	"	7·50
3,	" "	" "	"	6·00
Double Ring Bush Snath, Screw Nib				9·00
Loop	"	"		10·50
Dutch Bend, Extra				1·00
Cherry Snaths	"			1·50

Graham & Haines report the following prices on Scythe Stones:

Diamond Grit ... per gross	$6·25
White Mountain ... "	6·00
No. 1 Extra Indian Pond (Red End) ... "	4·00
No. 1 Indian Pond (Red End) ... "	3·75
(Above in ¼ gross boxes.)	
No. 2 Scythe Stones (in ¼ gross bozes) "	2·50

We publish below J. Clark Wilson & Co.'s list for the following seasonable goods:

Batcheller Scythe Snaths.

Patent Scythe Snaths.

No. A, Loop Fastener,	Lamson Bend	per doz.	$10·00
" A, " "	Dutch Bend	"	10·50
" A, " "	Mulley or Jersey Bend	"	10·50

Ring Scythe Snaths.

No. 1, Pat. Bush & Ring,	Lamson Bend	per doz.	$9·00
" 2, Black Irons,	Bush and Ring	"	8·00
" 1, Ring,	Dutch Bend	"	9·50
" 1, Ring,	Mulley Bend	"	9·50
" 1, Bush Snath,	with two rings	"	9·50
Cherry Snath, extra		"	1·00

Discount, 25 per cent.

Grain Cradles.

Wood or Wire Brace.

"Grapevine" ...	per doz.	$44·00
"Turkey Wing," or Common Shape	"	44·00
Morgan's Pattern ...	"	44·00

Discount, 20 per cent.

Cradle Fingers.

Cradle Fingers, finished	Net	per doz.	$2·50
" " unfinished	"	"	1·75

Pike's Scythe Stone.

Indian Pond, No. 1, Red End ...	per gro.	$4·50
" " No. 1, Extra, Red End ...	"	5·00
In ½ gross boxes.		
White Mountain ...	per gro.	$9·00
Diamond Grit ...	"	10·00

In ¼ gross boxes.
Discount, 10 per cent.

Our Stones are strong, of good, keen Grit, and will not Glaze.

German Scythe Stone.

Curved Oval, 8 in ...	per gro.	$6·50
" " 10 in ...	"	8·25

Discount, 10 per cent.

Millard's Scythes.

Discount 15 per cent.

No. 1, S. A. Millard & Co.'s Grain Scythe.
Color, Blue, full polished ... per doz. $15·00

No. 2, "S. A. Millard's Own."
Color, Red, Concave Set, extra polished Back and Bead ... per doz. 14·50

No. 3, "Oneida Chief."
Color, Rich Brown, Full Set, Mirror Blade, extra polished Back and Bead ... per doz. 14·00

No. 4, "Excelsior."
Color, Red, Half Set, polished lengthwise, full polished Back and Bead ... per doz. 14·00

No. 5, "Silver Steel."
Color, Red, Half Set, highly polished Back and Bead ... per doz. 13·00

No. 6, "Monitor."
Color, Red, Flat Bottom, full pol'd on under side, extra pol'd Back and Bead ... per doz. 13·00

No. 7, "Blue Racer."
Color, Blue, Full Set, Mirror Blade, extra polished Bead ... per doz. 12·00

No. 8, "Cast Steel."
Color, Blue, Half Set, highly pol'd Bead, ₱ doz. 11·50

No. 9, "Waldron."
Color, Blue, Full Set, extra wide, Mirror Blade, highly polished Bead ... per doz. 12·50

No. 10, "German Steel."
Color, Blue, Half Set ... per doz. 11·00

Reinstein & Moller Grass Hooks.

Assorted, painted red ... per dozen, $4·00
Net.

Linacre Grass Hooks.

$4·25 4·75 5·25 per dozen, gold.
No. 2 3 4
Net.

Sorby & Son Grass Hooks.

$7·25 7·75 per dozen, gold.
No. 2 3
Net.

Linacre Grain Sickles.

$3·50 4·00 4·50 per dozen, gold.
No. 3 4 5
Net.

Bolles' Hoes.

Solid Sockets,	Cast Steel,	Full Polish	per doz.	$9·00	
" Shank,	"	"	"	8·00	
" "	Ladies' Hoes,	"	"	6·00	
" "	Mortar "	"	"	13·00	

Discount 25 per et.

Cast Steel Rakes.

$9·00 10·00 11·00 12·00 per dozen.
10, 12, 14, 16, teeth.
6, 6, 6, 6 ft. Handles.
Discount, 30 per ct.

Malleable Iron Rakes.

$5·00 6·00 6·50 per dozen.
11, 13, 15 teeth.
5½, 6, 7 feet Handles.
Discount, 25 per ct.

Wood Head Rakes.

With Wrought Iron Teeth.

$3·50 4·00 4·50 5·00
8, 10 12, 14 teeth.
7, 6, 6, 6 feet Handles.
Discount, 40 per ct.

Potato Hooks.

No. 55, Round, 4 tines, 4½ feet Handles ...	per doz.,	$7·00
No. 56, Oval, 4 tines, 4½ feet Handles	"	7·00

Discount, 30 per ct.

Handles.

D Shovel Handles ...	per doz.,	$2·75
D Spade " ...	"	2·75
D Fork " ...	"	3·00
Long Bent Shovel Handles ...	"	2·00
" Manure Fork Handles ...	"	1·88
Hoe Handles ...	"	1·00

Hay Fork Handles,

Per doz	$1·50	1·75	2·00	2·50
Feet	5	5½	6	7

Discount, 10 per ct.

MOORE'S PATENT FLORAL TOOLS.

Packed 1 Set in a Box.

Painted Green, Polished Points ... per doz., $10·00
Discount, 20 per ct.

Hoe and Rake.

No. 401, Steel Hoe, Malleable Rake, 4 feet Handles ... per doz., $4·45
Discount, 25 per ct.

Floral Tools in Sets.

Hoe and Rake, Shovel and Fork.

No. 64, Plain Finish ...	per set,	$0·80	
No. 65, " ...	"	1·00	
No. 66, " ...	"	1·20	
No. 67, Ex. Finish, Varnished T H'dle	"	1·30	
No. 68, " "	"	1·40	
No. 69, " "	"	1·70	
No. 169, " "	"	2·00	

Discount, 25 per ct.

Garden Trowels.

Per doz	$1·50	1·65	1·80	2·10	2·30
Inch	5	6	7	8	9

Discount, 20 per ct.

Edging Knives.

No. 60, Cast Steel, 9 in ... per doz., $10·50
No. 61, " 10 in ... " 12·00
Discount, 20 per cent.

Shuffle Hoes.

No. 90, Cast Steel Blade.

Inch	4	5	6	7
Per doz	$4·25	4·50	4·75	5·00

Discount, 20 per cent.

Garden Reels.

Malleable Iron, with spear	$8·00	9·00
	No. 78	79
	16x8	20x11

Discount, 20 per cent.

At a meeting of the Scythe Manufacturers Association, held at Springfield, Mass., July 16, 1873, the following persons and firms were represented:

Eagle Co., Riverton, Conn.
Beardsley Scythe Co., West Winsted, Conn.
Thayer Scythe Co., West Winsted, Conn.
Winsted Manufacturing Co., Winsted, Conn.
Greenwood Scythe Co., New Hartford, Conn.
Edwin Richardson, Fitchburg, Mass.
H. S. Mansfield, Milliville, Mass.
New London Scythe Co., Scytheville, N. H.
Mascoma Edge Tool Co., Lebanon, N. H.
New Hampshire Scythe Co., Littleton, N. H.
E. T. Sibley, Newport, N. H.
Emerson, Stevens & Co., West Waterville, Maine.
Dunn Edge Tool Co., West Waterville, Maine.
Hubbard, Blake & Co., West Waterville, Maine.
Auburn Manufacturing Co., Auburn, N. Y.
S. A. Millard, Clayville, N. Y.
Not present, but concur:
David Wardsworth, Auburn, N. Y.
Hiram Holt & Co., East Wilton, Maine.

Resolved Unanimously, That as members of this convention, we agree to not warrant any Scythes the coming year, and most earnestly invite all Scythe Manufacturers not represented to carry out this agreement.

Resolved Unanimously, That no Scythes shall be sold the coming year at less than the following prices, viz.:

German Steel Grass—Plain, Oiled, Blue or Green ... $10·00
German Steel Grass—Top of Back Polished, Red or Bronze ... 10·62
Cast Steel Grass, Top of Back Polished—Oiled, Blue, Green, Red or Bronze ... 11·25
Silver Steel, Full Polished Backs—Oiled, Blue, Green, Red or Bronze ... 13·50
Clipper Grass, Red or Bronze—Sharp, Strawed 13·25
Clipper Grass, Red or Bronze—Sharp, Boxed.. 13·75
German Steel Grain—Plain, Oiled, Blue or Green ... 13·75
German Steel Grain, Full Polished Backs—Plain, Oiled, Blue or Green ... 14·25
Clipper Grain, Red or Bronze—
Sharp and Boxed ... 15·75
Bramble or Bush, Plain Light ... 10·62
Bush Ribbed Heavy, Red ... 12·50

TERMS: DISCOUNTS IN LOTS AS FOLLOWS:

1 to 5 dozen	list
5 to 10 dozen	5 %
10 to 25 dozen	10 %
25 to 50 dozen	12½ %
50 to 100 dozen	15 %
100 dozen and over	20 %

Which quantities may include any or all kinds of Scythes.

Cash, September 1, 1874.

If paid for previous to that time, a discount of 1 per cent. a month will be allowed.

Delivered in Bangor, Boston, Albany, New York, Philadelphia and Baltimore.

Description of Scythes shall govern the price, and not names.

As to quantities, the natural requirements of the buyer shall govern the discounts for the year, and not the immediate order.

H. S. MANSFIELD, President.
L. A. COOK, Secretary.

We are gratified to learn that Mr. Jas. R. Robinson, agent for the eminent Hardware house of Briscoe & Co., Melbourne, Australia, was in Philadelphia on Tuesday last, the object of his visit being the purchase of goods for that establishment. His purchases in Philadelphia include a full line of Saws and other goods from the Keystone Saw Works of Henry Disston & Sons. The manufactures of this celebrated firm are gaining a world-wide celebrity, and they are shipping goods in large quantities to the Canadas, South America, Cuba, China, Japan, and occasionally even to "merrie old England." The significance of the sale above noted will appear the greater when it is known that the establishment in Australia is a branch of the renowned house of Wm. Briscoe & Sons, Wolverhampton, England, who also have another branch in Dunedin, New Zealand.

In the Philadelphia *Ledger* we find the following paragraph:

A number of the employes of Henry Disston & Sons quit work on Monday, because the firm saw fit to discharge an obnoxious hand, and he not a saw maker. The firm are sorry that the men should allow themselves to be led away by such a frivolous pretext, but desire it to be distinctly understood that they shall exercise the right to discharge any employe whose actions are detrimental to the interests of the establishment. They therefore give notice that all hands who expect to retain their situations must present themselves ready for work on Wednesday morning or consider themselves permanently discharged, and if found around the works after that time will be dealt with according to law.

There are about one hundred and fifty men engaged in this movement. We are informed that Henry Disston & Sons will be able to fill all orders without delay and the inconvenience will be but temporary, as they are rapidly filling the places of the men who have so foolishly thrown themselves out of good and permanent situations. A number of these men were kept at work during the panic when it would have been much more to the advantage of the firm to have dispensed with their services; and this is the return.

An interesting case to Hardware men has just been decided in the United States Circuit Court in St. Louis. Hall, Kimbark & Co., the well known iron firm of Chicago, in February, 1873, sent circulars through the mails offering to sell Jenks' patent seat springs at a certain price. Geo. D. Hall, a heavy iron dealer, of St. Louis, ordered 3000 pairs at the price, but the firm refused to fulfill the order. At the trial depositions were read showing that the Chicago house considered the order of Mr. Hall an unusually large one, and for that reason they refused to fill it; but, on the other hand, it was proven that the same house had filled a larger order on the terms advertised in their circular. The jury gave a verdict for the plaintiff for $1350—being the difference between the price of the spring at the date of the circular and the price a week or two later. The principle was laid down that when a merchant sends a circular by mail offering to sell an article at a stated price, he is bound to fill an order at that price when it comes by due course of mail, unless his circular contains a reservation or limit as to time, etc.

If this be good law, our Hardware friends must look to the wording of their circulars,

and see that they do not commit themselves more than they intend. We do not know how the circular of Hall, Kimbark & Co. was worded, but we judge it must have contained a formal offer to sell the goods mentioned at the specified price, so that Mr. Hall argued it was an offer made to him by the house sending it, and all that was needed was for him to accept the offer and name the quantity he would take. We have not yet had the opportunity of examining the law of the matter, but the practical lesson is plain. At another time we shall have something to say on the legal aspects of such cases. The very cursory examination we have been able to give this subject has convinced us that the law is more stringent than is generally understood.

Charles E. Little, 59 Fulton street, is agent for Merchant's Improved Doweling Machines for Coopers' use, and quotes them as follows: No. 1, $5·75; No. 2, $5·00, each, discount 25 per cent. He also keeps in stock a full line of Coopers' and Slaters' Tools, Solid Cast Steel Pump Augers and Reamers (stamped "C. S. Little, New York,") Wood and Iron Truss Hoops and Darling, Brown & Sharpe's Machinists Tools. The following is the revised list of Coopers' Adzes, Handled:

No.	4	3	2	1
	$2·42	2·50	2·58	2·67

Discount 25 per cent.

On the 1st proximo the American Saw Company will remove their office from No. 1 Ferry street, New York, to their factory at Trenton, New Jersey. As most of our readers are aware, this company are proprietors of the patent for perforating Saws, an improvement by which it is claimed gumming is entirely avoided, and a great saving effected both in labor and files. We are pleased to learn that the up-hill and discouraging work which always attends the introduction of any important innovation on existing methods has been overcome, and perforated Saws, especially Cross Cuts, are rapidly gaining the popular favor, and may be considered a staple article in the trade. The company have established the following prices for perforated Cross Cuts with plain or fancy teeth (including "Champion"), for the ensuing season: Orders under 2 dozen, 68c, per foot, net; orders of 2 dozen and over, 65c. per foot, net. This is the regular price for these goods, and as the company aim to have the price uniform all over the country, they will in future decline to sell to any jobbing house that offer or sell these goods at better figures. The same company are introducing a novelty in Corn Knives, patented recently, and shown for the first time this season. The invention consists of a hook on the back of the knife, the utility of which is fully described in a circular which will be issued in a few days, and from which we extract the following: "The hook on the back of the knife enables the operator to raise the fallen stalks without stooping, and thus to perform much more work per day with much less fatigue than with any other knife. The hook is also of great advantage in bringing into the hand or arm those stalks that are too much scattered to be taken in at a single grasp." The knife is well finished, made from best quality of steel and warranted. The price has been fixed at $5·75 per dozen, net, to the retail trade.

Sidney Shepard & Co., Buffalo, N. Y., have just issued their revised Catalogue for 1874. It is in book form and contains 264 pages, printed on fine tinted paper, cloth bound, and is as fully and comprehensively illustrated as any book of the kind which has come under our notice. The first ninety-three pages are devoted to goods of their own manufacture, such as Stamped and Japanned Tin Ware, Tin Toys, Tinners' Trimmings and a miscellaneous assortment of House Furnishing Goods, Ice Cream Freezers, Patent Stove Boards, &c. The balance of the book is taken up with lists and illustrations of the principal goods sold by them, and of which they keep a stock. It is the intention of the publishers to supply one copy of this catalogue gratis to each of their regular customers, to be packed with their first order, or forwarded by express, as they may desire.

The removal of Benjamin Callender & Co. to their new store, No. 115 Milk street, Boston, has called forth some interesting reminiscences of an old Hardware House, which we copy from the Boston *Daily Advertister* of the 7th instant.

The changes which the thoroughfares of trade have undergone since this house, which dates its commencement from the year 1800, has been in existence, is thus noticed by the *Traveller*. The old firm of Jonathan and Edward Phillips began the hardware and cutlery jobbing business in that year at the corner of Union and Ann, now North street. In 1824 this was the oldest cutlery and hardware house in Boston. Mr. Benjamin Callender, at present the senior partner, entered the store of the Messrs. Phillips, then on Kilby street, during the latter part of that year. At this time Milk Water, High, Oliver, Federal, Franklin, Arch, Congress, Summer, Pearl and Chancey streets, and other thoroughfares in that locality, were mainly devoted to residences and surrounding grounds, owned and occupied by the more wealthy of the citizens of Boston. At the time of the great fire, which occurred on the night of Fast day, 1825, destroying many of the buildings situated on Doane, Kilby, Broad, Central and other streets in that locality, the store of the firm was several times on fire, and was only saved by the most persistent efforts on the part of the firm and its employes. Edward Phillips, the senior partner of the house, died in 1827, and William T. Eustis bought out the stock and stand of the surviving partner, Jonathan Phillips. Mr. Callender was admitted to an interest in the new firm, the style of which was William T. Eustis & Co. Mr. Eustis, who was well known and highly respected in this city, retired some years since, and Mr. Callender became the senior partner. At the time of the great fire of 1872, when the firm was burnt out on Federal street, Mr. Callender had been in business, in what is now known as the burnt district, as long, if not longer, than any other merchant in Boston, and now enjoys the reputation of having been engaged in the hardware jobbing or distributing business for a longer period than any other person in Boston. Commencing on Union street, the house has occupied stores on Kilby street, Liberty square, Pearl, Congress, Federal and Commercial streets. When the house was located on Kilby street, it was on the site now occupied by the Revere Copper Company. At that time the firm paid an annual rent of $800, and because this was raised to $1000, removed to Liberty square, where it rented a store for $600. The store on Kilby street, for which $1000 was then deemed an exorbitant rent, now rents for $6000 per annum. The members of the firm as it now stands are Benjamin Callender, Francis D. Hall, Chas. L. Bolles and George F. Wilder, all well qualified to sustain the prestige and character of the old house. In its line, the firm in the past has made no specialty of the goods kept on hand, but has offered, and will continue to offer, to its patrons a large and selected general stock of hardware, including cutlery and agricultural implements adapted to the wants of all sections of the country. The new store occupied by the firm is 125 feet deep by 30 broad, and comprises pleasant and commodious apartments well adapted for the display of goods on shelves or by sample, and in location and arrangement is one of the most convenient stores in Boston. The members of the firm will be pleased to meet their old patrons, and extend to all a cordial invitation to call upon them at their new store.

IRON.

American Pig.—We do not remember a time when the Iron market was characterized by more depression than at present. Notwithstanding the large number of furnaces out of blast, the quantity of Iron is increasing, and furnaces in distant parts of Pennsylvania and the interior of this State are pressing their Iron in this market. The best brands of Iron are held at our quotations, but for others these prices can be shaded. Lehigh Gray Forge is scarcer than any other grade, and is held strongly. It is reported that $31·25 was offered for a large lot of Gray Forge of a prime Lehigh brand, without success. We quote for best Lehigh brands: No. 1 Foundry, $35; No. 2 Foundry, $32 @ $33; Gray Forge, $28 @ $31.

Scotch Pig.—There is little doing, and prices are rather weaker than last week. Neither the position of trade here, nor the condition of things on the other side, is of a nature to reassure the holders of Scotch Iron. We note the sale of 500 tons Coltness on private terms. We quote: Coltness, $39 @ $40; Eglinton, $36·50 @ $37; Glengarnock, $38, though this brand has been quoted very irregularly.

Bar.—Pittsburgh mills are sending Iron here at 2·85 cents, delivered in New York. The best Philadelphia mills are holding at 3·25 cents, while smaller mills are selling at 3·1 cents. We quote Eastern mills 3·1 @ 3·3 cents.

Rails.—There have been no considerable transactions in foreign Rails. We note the sale of 100 tons on board, at $42, gold. 2000 tons of American sold at $58, currency, at mill. We quote $58 @ $60, currency, at mill.

Old Rails.—We quote without change, $40 @ $41, currency, and note the sale of 230 tons, Bridge and T mixed, deliverable in Baltimore, at $40·50.

Scrap.—We quote $41 @ $42·50. Some Iron can be had at the lower price, while other lots are held at the higher.

BRITISH IRON MARKET.

(Specially reported by cable for The Iron Age.)

WEDNESDAY, April 15, 1874.

Scotch Pig.—The market is quiet, with a declining demand. The amount of business is small, and prices are nominal. The following are makers' prices:

Coltness, No. 1	88/
Gartsherrie, No. 1	86/
Glengarnock, No. 1	85/
Eglinton, No. 1	80/

Manufactured Iron.—Little doing. The demand is small, and prices are weak. We quote: Best Staffordshire, Bars, £11 @ £13.

Rail.—The market is dull, with slight demand and little business. Prices are weak. We quote Welsh, £9 @ £9. 10/.

Failures.—The failure of an extensive Glasgow operator is reported. Also that of Samuel Osborn, File and Steel manufacturer of Sheffield.

METALS.

Copper. A moderate amount of business has been transacted during the week, summing up some 50,000 pounds Lake on the spot in small lots, prices ranging from 24¾ to 25 cts. Parcels for future delivery are firmly held at from 24¾ to 25 cents from June to October, the latter included, but there is as yet no anxiety shown to operate at similar figures. There were rumors toward the close of some large transaction, amounting to several million pounds, having been or being consummated, part for immediate delivery and part forward. Should the transaction have been or be closed at the figure that was given us to understand, say, between 24½ and 24¾ cents, the main holders of Copper here would find their position considerably strengthened, and the large purchase alluded to in our last issue would probably turn out to have been a well planned operation from its conception, unless England should suddenly drop to so very low a figure that the importation of Copper would appear a promising venture. To-days' cable despatch from Liverpool reads as follows: "Heavy Chilean charters have depressed the European markets. It gives no quotation; we presume, therefore, that there is no change from last week's, £85 for Best Selected, and £74. 10/. for Chili Bars. The manufactures of Copper have been well supported, as follows: Copper Bolts, 35 cents; Sheathing (over 12 oz.) 33 cents; Braziers (over 16 oz.) 35 cents. Yellow Metal unaltered at 24 cents per pound for Sheathing, and 30 cents per pound for Bolts, net cash.

Tin.—The upward reaction in England alluded to as having set in, in our last, is making steady headway, and we trust the recovery may prove a lasting one. The losses since January 1st have been very heavy, and the metal seemed depressed to a level unreasonably low. On the 8th instant the London quotation was £89 to £90 for common English, and £88 for Straits, while to-day it is £91 to £93 for the former, and £90 to £91 for Straits. The following is added in the despatch: "There is little obtainable at the enhanced rates, holders refusing to sell." The spot sales at New York during the week have been but small of any one kind, yet they have embraced all within the following quotations: Straits 24 cents, gold, Refined English at 21½ @ 21¾ cents, and L & F, 20 @ 20⅛ cents, while Banca commands 25⅛ cents, all gold. The market is firm, but uninfluenced as yet by the gradual European improvement. The East India telegrams, dated Penang and Singapore, yesterday and to-day, go to prove, that the distant markets are looking up. The prices quoted are $24 from Penang and $25 at Singapore, with orders filling for American account at the latter place. The Singapore despatch adds: "The stocks here are quite light, and sellers are holding for full prices." Important telegraphic accounts are to hand to-day from the Welsh Tin districts. The strike had begun to affect production, 35 mills being on the strike, with no reconciliation in immediate prospect and more mills giving notice. The presumption is, that it will take from a month to six weeks ere reconciliation can be effected. Our Tin Plate market has not been favorably influenced by the strike as yet, but is firm; eventually it may improve by reason of a temporarily curtailed production. Sales of Tin Plates for the week, 1800 boxes at quotations, We quote the same as follows: I. C. Charcoal, $10·25 @ $10·50; I. C. Coke, $7·75 @ $8; Coke Terne. $6·75 @ $7·75; and Charcoal Terne, $9 @ $9·75, all gold.

Lead.—Although some 500 tons of domestic were reported sold since our last, at 6c., gold, we have been unable to trace the transation to a reliable source; the market has, on the contrary, been devoid of all animation; higher prices, it is true, are asked, but nothing transpires. The market closes dull at the following nominal rates: Domestic, 6⅛ @ 6¼c., gold; common foreign, 6½ @ 6⅝c.; fine foreign. 7 @ 7⅛c., all gold; and American refined, 7¼c., currency. The latter is gaining in popularity daily, and on the whole it cannot be denied that domestic Lead is fast and seriously superseding the foreign product in our market, an encouraging sign of our growing importance as a Lead producing country. We have taken great pains to procure some reliable data about its present production in *Spain*, and have corresponded with people at Malaga, in the business, for this purpose. All we have been able to gather upon the subject of Peninsular production of late years will be found on another page of this issue. We hear that the production of "Silver Bearing Lead" in Spain is at present much neglected; that common Lead they produce as heretofore, whenever prices in England and here permit doing so—which they do not at present. There is but a scanty stock of Lead in first hands in Europe, hence a lack of cable quotations. The stock in first hands is also quite light here. All will depend on our production; if we produce an unusually large quantity this year, present prices will be high enough for the balance of the year. The manufactures of Lead are steady at the following rates: Bar, 8½c.; Sheet and Pipe, 9c.; and Tin Lined Pipe, 16½c., with a 10 per cent. discount to the trade.

Spelter and Zinc.—The sales have been 100 tons Missouri at $6·90, currency, the 100 pounds, and 50 tons Silesian at 6½c., gold, per pound. We quote domestic, 7c., currency, and Silesian, 6½ @ 6⅝c., gold. Stocks here of both foreign and domestic are light, and it is thought that the market will look up again as soon as Europe recovers from the consequences of the industrial crisis still going on there. Nothing of special interest has transpired in Sheet Zinc, which we nominally quote as heretofore, 8¼ @ 8½c., gold, for Silesian and Moselmann Sheet, and 8¼c. for Western.

Antimony is steady but quiet at 12⅝ @ 12¾c., gold, asking figure.

OLD METALS, PAPER STOCK, &c.

Business in this market has somewhat improved since last week. Prices are about the same, however, with the exception of Oakum Junk, No. 2, which has advanced ¼ cent per pound. White Linen Rags and Canvas Cotton No. 1 continue still in good demand. There was also an increased demand this week for Hemp and Grass Rope. There is but little call for old Metals. The market is still overstocked, and the dealers are unable to dispose of their accumulations. The purchasing prices offered by the dealers are as follows:

Old Metals.—Copper, 18c. per lb.; Yellow Metal, 13c.; Brass, 13c. @ 14c.; Composition, heavy, 14c. @15c.; Lead, solid, 5½c.; Tea Lead, 5c.; Zinc, 4c. @ 5c.; Pewter, No, 1, 21c.; do., No. 2, 8c. @ 12c.: Spelter, 5c. @ 5½c., Wrought Iron, 1¼c.; Sheet do., ½c.; Cast, do., ¾c. @ 1c.; Machinery, do., 1c.

Rags, &c.—Canvas, Linen, 5c. @ 5½c.; do. Cotton, No. 1, 6c. @ 6½c.; No. 2, 2½c.; White, No. 1, 6½c.; No. 2, 4c.; Colored, do., 2c. @ 3c.; Mixed, Woolen, 2c. @ 3c.; Soft, do., 6c.; Gunny Bagging, 1¼c. @ 1½c.; Jute Butts, 1¾c. @ 2c.; Kentucky Bagging, 3c. @ 3½c.; Book Stock, 3½c. Waste Paper and Scraps, 1½c.; Kentucky Bale Rope, 4c. @ 4½c.; Oakum Junk, No. 1, 4½ @ 5c.; do. No. 2, 3½c.; Tarred Shaking, 1c.; Grass Rope, 3½c.

COAL.

The coal market is without any definite change this week. Prices of Anthracite remain the same as quoted in our last report, and dealers say that there will be no change of consequence until the 20th of this month. The domestic trade has been very dull this week; retail dealers are not laying in their stocks as fast as was anticipated, and are only purchasing for their immediate wants. This seems to be a mistaken policy, as prices are now lower than they will be hereafter during the shipping season. Dealers are acting with more caution than prudence.

The dealers in Bituminous Coal complain of dullness in business, although several large sales are reported. Prices remain without change. The quotations for Anthracite are $5 to $6, by the cargo; and for Gas Coals the rates are: West Virginia, $8; Cumberland, soft, $7 @ $7·25; Westmoreland Gas, $7·50 @ $8.

The prices for Cumberland Coal at the different shipping points, f. o. b. are as follows: Baltimore, $5; Georgetown, $4·75; South Amboy, $6·75.

The demand for foreign is limited, and prices are nominal. The quotations are: Liverpool House Cannel, $20; Liverpool Gas, $11; Newcastle Gas, $12 @ $13; Scotch, $9·50.

The Coal transported over the Cumberland Branch Railroad during the week ending April 11, 1874, amounted to 4421 tons, as against 5276 tons shipped in the corresponding period of last year, showing a decrease of 855 tons. Over the Cumberland and Pennsylvania Railroad, for the same period, the shipments were 42,955 tons, against 50,612 tons shipped in 1873, a decrease of 7656 tons.

IMPORTATIONS.

Of Hardware, Iron, Steel and Metals into the Port of New York, for the week ending April 14, 1874:

Hardware.

Boker Hermann & Co.
Casks, 33
Cases, 1
Arms, cs., 18
Bedell D. S.
Cases, 1
Beam & Murray,
Mdse. pkgs., 4
Carlyle W. A.
Cutlery, cs., 1
Field A. & Co.
Casks, 9
Cases, 6
Chains, cks., 3
Mdse. pkgs., 25
Harris S. E. & Co.
Cases, 5
Hayden & Tompkins,
Cases, 1
Hildick A. H.
Mdse. pkgs., 15
Hilger E. & Sons,
Mdse. pkgs., 7
Hyatt & Spencer,
Chains, cs., 1
Cases, 2
Hans A.
Arms, cs., 1
Harmar Wm. & Co.
Mdse. pkgs., 4
Kansche & Downing,
Cases, 4
Lamarche H.
Arms, cs., 3
Lau & Gartichs,
Mdse. pkgs., 3
Lennox E. S.
Wire, lots, 280
Liddle & Kardind,
Cases, 2
Mason John W. & Co.
Wire rope, coils, 10
Moore's J. P. Sons,
Arms, cs., 10
McIlvaine J. R.
Cases, 1
Phelps, Bloom & Brown,
Cases, 1
Russell & Erwin Mfg. Co.
Files, cks., 3
Schoverling & Daly,
Guns, cs., 9
Mdse. pkgs., 4
Tillotson L. G. & Co.
Galv. wire, lots, 300
Windmuller L. & Roelker
Arms, cs., 2
Wiebusch F.
Anvils, 100
Cases, 1
Cutlery, cs., 1
Chains, cks., 5
Order.
Casks, 2

Iron.

Crocker Bros.
Pig, tons, 100
Fleitmann & Co.
Plates, pkgs., 100
Lang W. Bailey & Co.
Tubes, 74
Mdse. pkgs., 25
Bars, 172
Munez, Son & Co.
Scrap, pkgs., 60
Naylor & Co.
Fish plates, bdls., 1341
Phelps, Dodge & Co.
Sheet, bdls., 435
Page E. & Co.
Bars, 2114
Randolph L. V. F.
Rails, 599
Vatable H. A. & Son,
Scrap, tons, 87
Order.
Rails, 999

Steel.

Drexel, Morgan & Co.
Bars, 73
Hogan John,
Packages, 2
Hopkins E. S.
Bundles, 70
Naylor & Co.
Cases, 20
Axles, 4
Tires, 1
Mdse. pkgs., 2
Prosser Thos. & Son,
Tires, 33
Piersons & Co.
Bundles, 303
Cases, 2
Order.
Bundles, 584
Rails, 2048
Bessemer rods, coils, 5

Metals.

Byrne Joseph & Co.
Tin, slabs, 378
Munez, Son & Co.
Scrap, zinc, pkgs., 5
Phelps, Dodge & Co.
Tin plates, bxs., 17,239
Barrels, 50
Tin, slabs, 1152
Rubira & Co.
Scrap metal, pkgs., 6
Vatable H. A. & Son,
Scrap metal, cks., 8; bbls., 2
Wheeler E. S. & Co.
Tin plates, bxs., 550
Windmuller L. & Roelker
Zinc, cks., 17
Order.
Tin and terne plates, bxs., 3711
Antimony, cks., 4
Tin slabs, 408; ingots, 1869
Lead, pigs, 1760
Without bills of lading.
Tin plates, bxs., 1018

PHILADELPHIA.

PHILADELPHIA, April 14, 1874.

The feeling in Iron circles is one of improvement, and of more active business in the immediate future. The certainty of one or the other of the measures now occupying Congress being passed, either of which will increase the volume of currency and advance prices, has given the belief that Iron is now at the lowest possible point of the year, and a disposition is shown to purchase for future uses. Beside this, it is clearly evident that at present prices Pig Metal is being produced at a direct loss, and that there is no reason to expect any possible reduction in cost of manufacture in the future, at least so far as seaboard localities are concerned. The Western markets also show signs of improvement, and the reaction will early reach the East. With the renewal of the business of the country the truth of the theory of over production or too great productive capacity will be proven. A fairly active demand for the remainder of 1874 will, it is believed, show a marked scarcity of Pig Metal before fall, and consequently higher prices.

There is no change to note in prices, save a stiffening and absolute enforcement of quoted rates. In Pig Metal the demand is principally for Forge. Manufactured Irons continue as before, with a little better demand. More trouble is threatened with labor, the puddlers having, it is said, determined on a demand for 8⅓ per cent. of the selling price of bars as their future wages, an advance which will be resisted by the mills. The ore miners of Lake Champlain, whose annual wages are fixed at this period, will, it is said, be reduced one dollar per day, the wages now being $3 for the same amount of labor done in other branches at $1·50 per day. This action will be, it is thought, resisted by a strike, and considerable uneasiness as to the summer's supply of puddling ore is felt. Any scarcity of this would at once advance the price of bars.

Rails are in more request and inquiry, without any large transactions. Old Rails are quiet, but no lower, and Scrap is firmly held at previous quotations.

The following prices fairly represent the prevailing rates for Iron in this market:

PIG IRON.—No. 1 Foundry, $34 to $35; No. 2, $32; Gray Forge, $29 to $30.

BARS—3·2 to 3·3 cts. per lb.

RAILS—$60 to $65, at works.

OLD RAILS—$40 to $42.

The sales include small lots of Foundries at quotations for local uses; 2000 tons Lehigh Gray Forge at $27 at furnace; 2000 do. different brands at $28 at furnace; 500 tons Old Rails Baltimore shipment, at $41·50 in Philadelphia; 2000 tons Rails at works, at $62·50, and sales closing of 3000 tons more of same, at about same figures. Small sales of Scrap, aggregating some 500 tons, and averaging $38·50 to $39.

Messrs. BLAKISTON & COX, 333 Walnut street, under date of April 14, write as follows:

The past few days has developed an inquiry for all kinds of material. There is more demand for money, and business prospects are looking much better than a few weeks ago. All those connected with the trade show a disposition to do business, and this, with the spring weather now upon us, has probably stimulated this inquiry. There is little or no change in prices, there being no demand in any branch of the trade to produce an advance. In *American Pig* there have been sales of 1200 tons Nos. 1 and 2 Foundry Iron at $35 and $33. Hoboken delivery, and sales of 500 tons No. 2 Foundry, delivery here, at $32. In Forge Irons transactions have been limited, and good Gray Iron may be noted as scarce. The lower grades of Mill Irons, however, are obtainable at low figures. We note sales of 1000 tons White at $23. We quote No. 1 Foundry at $35; No. 2 Foundry at $32 and $33, Gray Forge at $29 to $31. White and Mottled nominal at $25. *Scotch Pig* is not much inquired for, and may be quoted at $40, Eglinton, and $42 for Glengarnock. *American Rails*, (new), are held at $63 to $65, at the mill. We hear of no transactions *Old Rails* are inquired for, and we hear of transactions, but failed to learn particulars. There is no stock of consequence, and prices are nominal. *Scrap.*—No. 1 Wrought is in large stock, and sales have been made recently at $41 to $42. Cast is quoted at $27, nominal. *Bars* are steady, and the mills are receiving new orders daily. Prices are unchanged, with 3·2c. as a base.

PITTSBURGH.

PITTSBURGH, April 13, 1874.

PIG METAL.—Trade continues fairly active, and as the feeling seems to be generally entertained that the lowest notch has been reached, buyers are taking about all that offers at current rates, hence, as might be expected, the market is considerably firmer, although, as compared with the date of my last report, there has been no quotable change in prices. It is said that the offerings are not as large as they have been, which is pretty good evidence of a stronger market, and, as a rule, it was only those who were pressed for funds that have been selling at the low prices which have prevailed for some time past. It is claimed by those who are in a position to know, that there is an actual loss of from $2 to $3 per ton on every ton of Pig sold at present rates; hence the situation is anything but pleasant for producers, and they are very anxious, as might be expected, for an improvement, the prospects for which are not very flattering. There will be, no doubt, as there has been already, an increased demand, but the outlook at this writing is not very favorable for any material improvement in prices. If the currency of the country is increased, which, by the way, manufacturers here very generally are favorable to, there will, no doubt, be a general appreciation in values, Pig Iron included, but unless it is, there is but little chance to get prices up, and the result will be, sooner or later, a general suspension by the furnaces. Good Gray Forge Irons may be fairly quoted at $27 to $27·50, cash, and $28 to $28·50, 4 months. Sales of some 3000 to 4000 tons were made within the range of quotations during the past week, and, as already intimated, there are fully as many, if not more, buyers than sellers at quoted rates. No. 1 Foundry quotable at $33 to $35, 4 months; and No. 2, $30 to $32.

MANUFACTURED IRON.—The market for Manufactured Iron continues fairly active. It is true, orders are not coming as freely as they did a month ago, nor is the demand so urgent, yet the mills have all they can do, which is evident from the fact that they are running to their full capacity. Manufacturers complain more about small margins than a dearth of orders; although there is no question but what close shaving stimulated trade, as there is no place in the country that can compete successfully with Pittsburgh at the present time. This is evident from the fact that while there has been a general stagnation in the Iron trade at competing points ever since, and even before, the panic, the mills here have had all they could do, and it is said that the production of Merchant Iron was larger here during the past winter than ever it was before in the same time. Our manufacturers are receiving orders from all parts of the country. Until of late years, we had to depend mainly upon the West and South for a market, but our trade with the East is now large and steadily increasing, shipments are being made almost daily to New York, Philadelphia and Boston, and other Eastern cities. Prices have undergone no change; quotations may be given on a basis of 2¾c. for Merchant Bars, that is for round lots, and one to two tenths additional for smaller lots.

STEEL.—There has been no falling off in the demand for Steel. Our manufacturers continue to report that, although running to their full capacity, they have all they can do, and this will no doubt continue up until July, perhaps all summer. The Steel trade of Pittsburgh is growing every year. It is rapidly driving the foreign article from all the markets of the country, because of its being able to furnish an article equally as good so much cheaper. No change whatever to note in prices.

NAILS.—Orders are not coming in as freely as they did a month ago, yet the factories have about all they can do, and there is not much doubt but this will continue during the balance of the season. Prices remain as last quoted, $3·80 to $3·85, with two per cent. discount for cash.

WINDOW GLASS.—There is nothing new to record in regard to this important staple; trade, while it has not come up to general expectation, is fair, and is likely to continue so during the balance of the season. No change in rates: 65 to 65 and 5 per cent. discount off, Pittsburgh card.

The Pittsburgh *Commercial* of April 11th says: The sales of Pig metal reported below show about the same quantity sold as last week; but it is proper to say that for several days past the demand has not been so good as at date of last report, and the prospect for the near future is not at all flattering. Both sellers and buyers appear to be waiting for something to turn up, for we do not learn of any great anxiety to sell or buy at the figures quoted in our reports. We are reported the following sales:

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORE.

1600 tons gray forge, red short	$28·50—4 mos.
1000 tons gray forge, red short	27·00—cash.
500 tons gray forge, neutral	28·50—4 mos
500 tons gray forge, red short	28·00—4 mos'
300 tons white and mottled, red short	28·00—4 mos'
200 tons white and mottled, red short	27·50—4 mos'

200 tons gray forge, neutral..... 27·00—cash.
100 tons gray forge, red short..... 28·50—4 mos.
100 tons gray forge, neutral..... 28·00—4 mos.
50 tons white and mottled..... 26·50—4 mos.
50 tons No. 1 foundry..... 35·00—4 mos.
20 tons No. 1 foundry..... 30·00—4 mos.

ANTHRACITE.

40 tons No. 1 foundry.....$32·00—4 mos.
20 tons white and mottled..... 27·00—5 mos.
100 tons mottled..... 27·00—5 mos.

COKE FOUNDRY.

20 tons No. 1 foundry.....$31·00—4 mos.

HANGING ROCK CHARCOAL.

20 tons No. 2 foundry..... .....$37·00—4 mos.
26 tons No. 1 foundry.....$41·00 @ 42·00—4 mos.
20 tons cold blast..... 62·00 @ 65·00—4 mos.

CLEVELAND.

APRIL 13, 1874.—For the past fortnight we have experienced a duller Pig Iron market than at any time since the panic, excepting perhaps the interval immediately following the crash. Foundry Bituminous Irons have been in light demand, prices ranging from $33 to $35 for No. 1, according to brand, and $31 to $32 for No. 2. Gray Forge has ranged from $27 to $30, sales being noted at $28·50 in some quantity, on 4 months. Consumers are adhering generally to the "hand-to-mouth" policy, as it is called, and are buying only for immediate consumption. There has been considerable activity in the Lake Superior Charcoal Pig market. The Bessemer Steel Companies, generally, are asking for bids. Prices remain at $40 for Nos. 1 and 2. Car Wheel and Malleable grades are without special interest, prices being about the same, viz.: No. 3, $45·50; Nos. 4, 5 and 6, $48·50. Scotch Pig has not been in demand, except for moderate amounts. Prices for Eglinton and Clyde remain at $40.

CINCINNATI.

Messrs. ADDY, HULL & CO., under date of April 13, write us as follows: The market continues quiet without material change in prices. Demand, for Foundry grades improves slightly, but buyers are evidently hoping for still lower prices. Car Wheel Irons are in very light demand, and quotations for this grade are nominal.

HOT BLAST CHARCOAL.

Hanging Rock No. 1..₱ ton..$36·00 @ 38·00—4 mos.
" " No. 2..... 33·00 @ 37·00—4 mos.
" " Forge..... 30·00 @ 32·00—4 mos.
Tennessee No. 1..... 33·00 @ 36·00—4 mos.
" Forge..... 30·00 @ 32·00—4 mos.
Alabama No. 1..... 34·00 @ 36·00—4 mos.
Missouri No. 1..... 38·00 @ 39·00—4 mos.
" No. 2..... 35·00 @ 36·00—4 mos.

HOT BLAST STONE COAL.

Missouri No. 1..... ₱ ton..$35·00 @ 37·00—4 mos.
" Forge..... 30·00 @ 31·00—4 mos.
Ohio No. 1..... 33·00 @ 36·00—4 mos.
" Forge..... 30·00 @ 31·00—4 mos.
Scotch Pig, No. 1..... .....

COLD BLAST CHARCOAL.

Hanging Rock Car Wheel ₱ tn.$55·00 @ 60·00—4 mos.
Missouri " " ..... 55·00 @ 57·00—4 mos.
Kentucky " " ..... 55·00 @ 57·00—4 mos.
Tennessee " " ..... 55·00 @ 57·00—4 mos.
Georgia " " ..... 55·00 @ 57·00—4 mos.
Alabama " " ..... 55·00 @ 57·00—4 mos.
Machinery and Forge..... 55·00 @ 57·00—4 mos
Blooms..... 100·00 @ 110 00—4 mos.

LOUISVILLE.

Mr. GEO. H. HULL, under date of April 13, writes us as follows: The market is quiet but steady. There is no immediate prospect of the mills resuming work, and Forge Irons are not salable at quotations. Foundry and Car Wheel Irons are in moderate request to supply immediate wants. The usual time, 4 mos., is allowed on the quotations below:

HOT BLAST CHARCOAL.

No. 1 F'dry, from Hanging Rock Ores.$38·00 @ 40·00
" 2 " " " " .. 34·00 @ 36·00
" 1 Forge, " " .. 31·00 @ 32·00
" 1 F'dry, from Tennessee Ores..... 35·00 @ 40·00
" 2 " " ..... 33·00 @ 35·00
" 1 Forge, " " ..... 30·00 @ 31·00
" 1 F'dry, from Alabama Ores. ..... 35·00 @ 38·00
" 1 " Iron Mountain Ores. 41·00 @ 42·00

HOT BLAST STONE COAL.

No. 1 F'dry, from Missouri Ores..... 34·00 @ 36·00
" 2 " " " .. 32·00 @ 33·00
" 1 Forge, " " .. 30·00 @ 31·00

COLD BLAST CHARCOAL.

Car Wheel from Hanging Rock Ores.. 60·00 @ 63·00
" " Tennessee Ores..... 53·00 @ 55·00
" " Alabama Ores..... 55·00 @ 57·00
" " Georgia Ores..... 55·00 @ 57·00
" " Missouri Ores..... 53·00 @ 57·00
" " Kentucky ..... 55·00 @ 57·00

BALTIMORE.

Messrs. WYETH & BROTHER, Iron and Steel merchants, South Charles and Lombard streets, report us the following prices under date of April 14, 1874: Trade has slightly improved during the past week, but the prevailing feature is still dullness for the season, and we quote the list as unchanged, and the market quiet.

AMERICAN REFINED BAR IRON.

1 to 6 wide by ⅜ to 1 thick.. } 3 1-10c to 3 3-10c ₱ lb.
1 to 4½ wide by 1½ to 2 thick }
Round and square, ordinary sizes, from
⅝ to 2 inclusive .....3 1-10c. to 3 3-10c. "
Hoop Iron, 1½ wide and upward...4¾c. to 5c. per lb.
Band Iron, from 1¾ to 4 in. wide..4 to 4½c. "
Horse Shoe Iron ⅜ to 1 wide by ⅜ to ½ thick..... 4½ to 5c. "
Norway Nail Rods.....7¾c. to 8¾c. "
Black Diamond Cast Steel, Flats, Squares and Octagon, ordinary sizes.....16¼c. "
Machinery Steel.....11¼c. "
Cast Spring Steel.....11c. "
Homogeneous Steel Plate. ..... 13c. "
Perkins' Horse Shoes, per keg of 100 lbs.....$5·87½
" Mule Shoes " " ..... 6·87½
Common Horse Nails, from 14c. to 18c per pound.

	10	9	8	7	6	
Putnam Horse Nails..	23	24	25	26	28c.	per lb.
	10	9	8	7	6	
Globe Horse Nails..	23	24	25	26	28c.	per lb

R. R. Spikes.....5½ by 9-16 at 3¾c. to 4c. per lb.

FRANCE.

(Moniteur des Interets Materiels).

PARIS, March 29, 1874.—*Metals.*—We have but to repeat what we said about the European metal markets last week: nothing doing worth while reporting and the general tendency one of increasing weakness. *Copper* in England has been but feebly supported and is quiet there; Chili Bars, good ordinary brands, £76. 10/; best brands £78 to £80; Tough Cake and Ingots, £85 to £86; Best Selected Ingots, £87 to £89; Burra Burra and Wallaroo Cake, £86 to £87; Yellow Metal, 8¼d. per pound. Paris is inanimate, with prices slightly lower for all sorts. Chili Bars, deliverable at Havre, 205 francs; Ingots, 217½; English Tough, 217½, and Carocoro ore, pure Copper, 210. The heavy charters at Valparaiso have also affected the Havre market, which has become weak, with Chilian and Peruvian Bars, 200 to 210 francs. In Germany not much change has occurred; consumption from all appearances is on the increase, but prices might be firmer. There is greater strength, however, at Berlin, and good sorts command from 29½ to 30¼ thalers the 50 kilos. Hamburgh is inanimate; Minnesota there, 122 marks. *Tin.*—The Dutch sale of the 25th instant averaged 55 35 guilders for Banca, while Billiton ranged from 53¾ to 54. Banca has since been fluctuating in Holland between 54 and 53, July selling down to 51. Banca at London, £92; English in Slabs and Ingots, £94; Rods in barrels, £95; Refined, £96. Straits', cash, £90 10/; 3 months, prompt, £90 to £91. Paris has, on the whole, been quiet, with a declining tendency; Banca deliverable here or at Havre, 262½ francs; Straits 247½, and English at Havre or Rouen, 250. Neglected at Marseilles, at nominally 250 francs for Banca. Little doing in Germany, and values irregular. At Berlin, Banca, 35 to 35⅛ thalers; at Hamburg, 1·25¼ to 1·26 marks. *Lead.*—The firmness of holders on the one hand, and the reserve of consumers on the other, restricted business in this metal during the week. Prices have not shown much steadiness. English Pig on the spot at London, £22 to £22. 5/; English Soft, V. & S., London or Havre, £22 to £22. 10/; French Lead at Paris, 54 francs; Spanish at Havre, 55; English, 55; Belgian and German here, 54¾. Marseilles, which up to quite recently took for the time being the lead in determining the value of the metal, has relapsed into apathy with it. Pig there is selling at 53⅛, 90 days. No change in German. *Spelter*—Silesian, spot, at London, £22 to £22. 10/; at Birmingham, £23, with some business doing at both places. At Paris there is no improvement, notwithstanding the return of spring weather. We quote Silesian at Havre, 60 francs; other good brands here or at Havre, 59. Marseilles is on the decline. Nothing has transpired in Germany, where prices are nominally unaltered, while the tendency is rather downward. *Iron*—There is no animation in the Iron trade. Most of our works are occupied in filling some small orders. Yet there is a ray of light, and better times are looked forward to with greater confidence. Greater firmness is thus imparted to iron values, Wrought Iron in particular, Pig Iron still forming an exception, continuing, as it does, with a downward turn, not likely to obtain relief till we are on a par with competing countries. At Saint Dizier "affinage" is 135 francs. English Pig costs 123½, laid down at our Northern ports. In the Muerthe and Moselle prices are nominal. Wrought Iron at Paris is 250 francs; Sheet, 310 to 320. *Coal*—The National Assembly has passed the law frequently alluded to, taxing freight trains. By decree of the President of the Republic, the mining laws of France have undergone a modification, giving greater control to the government in taxing mining lands. Hitherto the tax was levied according to a preliminary arrangement between government officials and the owners of mines, invariably in favor of the latter. The State now reserves its rights. Coal has been quiet. In the Pas-de-Calais region the decline has not been stopped yet, it would appear, and common Coal has gone down from 18 to 20 francs to 15 to 16. At these figures a large business is doing.

BELGIUM.

(Le Commerce.)

BRUSSELS, March 28, 1874. *Iron.*—With the sole exception of Rails and Sheet Iron, the article is neglected and the market is in anything but a satisfactory position. Yet the accounts we are receiving from various quarters of Belgium point to a revival, especially in the Liege district. Pig Iron is cheap and so is coal; the demand is stirred up, thus stimulating activity in industrial circles. Pig Iron, nevertheless, remains but indifferently supported, owing to the competition which the Grand Duchy of Luxembourg is making us, where the supply is on the increase, and where large quantities can be procured at between 75½ and 76 francs. Sheet Iron remains firm, but all other descriptions of rolled iron are feebly sustained. *Coal.*—Although not much is doing, there is greater hopefulness. Coal values have now been landed at a figure low enough to induce the belief that they cannot decline to greater depths—we mean the price of 15 francs we have arrived at. The rise has been an exaggerated one, but the decline seems equally so. Wages have been lowered but between 10 and 15 per cent. in the Belgium coal regions. If the companies at this rate of wages, and on the basis of 15 francs, still find collieries a remunerative business, we may look into the future with cheerfulness, and it is to be hoped that prices may now become steady and convince large consumers that bottom has been touched.

HOLLAND.

(Koch & Vlierboom.)

ROTTERDAM, March 24, 1874. *Tin* is quiet on account of the auction sale to-morrow. Last sales effected, Banca, spot, at 58 guilders, delivery from to-morrow's auction from 59 down to 57¼, then recovering to 57¾; May auction, 59 to 57¼, and Billiton afloat, per steamer, 55½ to 55.

Evers & Co.

ROTTERDAM, March 28, 1874. *Tin.*—The Netherland Trading Society sold at auction, at Amsterdam, on the 25th instant, 19,361 slabs Banca between 53½ and 57, average 55·35 guilders the 50 kilos, and 3067 Billiton between 53¾ and 54, the entire quantity being sold. Since the sale there were sold on auction paying terms Banca at 54, 53½ and 53; from the May sale, futures, at 53½ and 53; from the July sale, futures, at 51½ and 51; spot Billiton at 51½ and August and September delivery at 51.

EAST INDIES.

(Clark, Spence & Co.)

POINT DE GALLE (Ceylon), March 6, 1874.—*Plumbago.*—As anticipated in our last, prices have again considerably declined, and transactions are reported at £15, Lump; £8. Chips; and £4, Dust. Even at these rates there is barely any inquiry, but we do not think they will recede much lower, because most dealers would prefer shipping on their own account, and production would be considerably discouraged, if not checked. £15 to £17 is equal to £18 to £20 per ton, free on board, with freight, and exchange at par; £3 to £9 to £11 to £12, and £4 to £4. 10/ is equal to £7 to £7. 10/, the market closing quiet. The present freight rate is 60/ the ton of 20 cwts. Coal is in about the same position as when we last reported; stocks in private hands have continued to increase, arrivals having been in excess of deliveries, and we can only repeat the easier feeling as regards coaling of steamers; current rates may be quoted at 57/6 to 60/, free on board. Exchange, 1/11⅛ to 1/11¾, 6 months' sight, London.

It was reported that the Port Henry miners would resist any reduction in their wages. The following notice, issued last week, will show what course their employers take:

NOTICE.—In consequence of the light demand for our ore this season, we are compelled to announce that on the first day of May next all work at our mines will be stopped. How long we shall remain idle is altogether uncertain. We shall be ready to commence work just as soon as we can find purchasers for the ore; but when that will be it is impossible for us to say. We advise all our men who can possibly find work elsewhere, to do so, as the suspension may possibly last through the entire season.

Dated at Port Henry, N. Y., April 9, 1874.
WITHERBEES, SHERMAN & CO.
PORT HENRY IRON ORE CO.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

SHEFFIELD, Eng., March 30, 1874.

THE LABOR STRUGGLES,

are daily becoming more numerous, and on a much larger scale; the cablegrams will have prepared you for the intimation that these struggles have very seriously interfered with business in several important districts, but I shall here only refer to the more prominent disputes, or such as have a direct interest for your trade. To begin with, I note that at Glasgow on Tuesday: a miner's conference was held to consider the proposed sliding scale of wages—3/6 per day when iron should be 50/, and advancing 6d per day for every 5/ above 50/. Twelve of the Scotch districts favored this proposal, six wished the scale to commence at 4/, when iron was 50/, and two desired 5/, whilst four districts opposed the scale. After some discussion the conference sapiently set aside the object for which they had met, and resolved to bring out on strike the men at three ironworks, viz., Messrs. Baird's, Dunlop's and Merry & Cunnirgham's. By this step 5340 miners are thrown idle, but receive 15/ per week each. This proceeding is bold, but the ironmasters appear firm, and it hardly seems likely that they will consen to their own defeat, by acceding quietly to this piecemeal action. This is rendered the more certain by the fact that nearly the whole of the furnaces in Scotland are damped out, and will remain so until this fight has terminated. I do not suppose that the strike will be of long duration, the masters being quite firm, and practically indifferent to the result of closing the works for a month or two. The Staffordshire miners are either more determined, or not so well advised. No less than 12,000 of these colliers came out on strike on Saturday morning, under circumstances which have been fully detailed in my previous communications. Briefly, the cause of the strike is a proposal on the part of the employers to reduce the thick coal miners' wages 1/ per day, and thin coal miners', 9d. Several conferences have taken place between both sides, but with no good result. In the Cannock Chase district 4000 miners are still out, without any immediate prospect of the dispute being settled. They resist a "drop" of one shilling daily, and assert that there is abundant evidence, proving that the cost of raising coal (sold at about 16/ to 19/), including royalty, does not exceed 7/ per ton! Each man in both these last-named strikes is allowed 10/ per week, with a shilling extra for each child. The coal miners in Leicestershire, tin miners at Wheal Bassett (Cornwall), the colliers in the Oldham district, with others elsewhere, are on strike, and serious disputes are threatened in Southwest Lancashire, Durham, Yorkshire, and Derbyshire. The latest phase of the wages question between the ironmasters of the kingdom and the ironworkers is this: that at a general representative meeting from every district in the United Kingdom, held last week at Darlington, it was decided to accept a minimum of 9/6, and a maximum of 12/6 per ton, with an extra 6d per ton, in addition to the 1/ in the £.; this being, in effect, an acceptance of the master's terms, will probably bring the matter to a satisfactory termination. The bucolic mind also appears to be awake to the importance of its position as a section of capital; and it too—or at least the farming section of it—in several of the essentially agricultural eastern counties, has locked out some 3000 unfortunate laborers, who are guilty of the enormity of asking for 13/ per week; or, in more favored parts, 18/. Some day or other agricultural labor in this country *will not be obtainable* at twice the price. The tinplate workmen in South Wales are to be locked out to the number of 13,000, if they persist in pressing their demand for higher wages. In the Forest of Dean the Sydney and Wigport Iron Company are discharging several hundred men owing to the high price of labor and the dullness of trade. Need I elongate this list? I do not think it necessary; yet, before proceeding further, I will remark that sectional meetings of trades unionists throughout the country repudiate the London trades' condemnation of Mr. McDonald for joining the Royal Commission on labor, and in many instances have passed resolutions approving of his decision. Some how or other I have privately arrived at the conclusion that rather too much importance is arrogated to themselves by the trades unions, and that there is by no means so much stamina or "back bone" in them as is popularly imagined. The truth probably is that the real power of these organizations is centralized in three or four men—leading spirits in the metropolis.

THE STATE OF TRADE

is, as may well be imagined, anything but brisk. The strikes hinder what business there is, and profits is really so marginal that little and middle-class men prefer to let matters "slide." In conversation with an "iron" man the other day, I chanced to allude to the fact that the South Wales ironmasters were quoting £9. 5/ for iron rails, whereupon this gentleman waxed exceeding wroth, averring that is a pretty well known fact that that price hardly covers the cost of production, to say nothing of profit. "Why, said he," they cost us here nearly £2 per ton rolling, not to mention cost of the ore, fuel, puddling, balling, hammering, straightening, slotting and so on. We could not do it here for that money, except to lose some shillings per ton." This, I have no reason to doubt, is correct, but we must bear in mind that in South Wales labor is cheaper than in any other iron district, that coal and iron are found on the very spot, and that the Welsh ironmasters are by far the most wealthy of the kingdom; they are, at any rate, taking the few rail orders recently put forth, although the Middlesboro' men have reduced prices under £10, and the South Yorkshire firms are doing what they can to "be in at the finish." The manufactured iron trade of the country is very dull. There is little inquiry; there are fewer orders, and by no means cheerful prospect. Whether finished iron will be reduced at quarter day or not is just at present beyond conjecture. Much depends on the result of the negotiations with the men on the wages question. The probabilities would appear to be in favor of a fall.

THE SCOTCH IRON TRADE

has fluctuated considerably. Warrant's fell as low as 79/ and 80/ on Thursday and Friday, but they have recovered somewhat on the strength of a fairly strong demand, and are now quoted at 83/ to 83/6 for cash. Makers' prices are altogether unsettled and unreliable; they are, in the main, not different from the figures last given, the dullness of trade being to a certain extent counterbalanced by the almost total cessation of production—the somewhat large stocks operating *in medias res.* Messrs. Watson & Campbell, iron merchants of Glasgow, have called their creditors together, with liabilities stated at £324,475, and assets, £58,398. There are also sundry failures of minor consequence, and it is not improbable that we shall shortly hear something of the affairs of the many newly-formed "Limited Companies"—all launched while the tide of high prices was at its very flood, by various shrewd venders and promoters. Of these we shall shortly hear more.

SHEFFIELD.

Matters are very dull here. The inquiry for common cutlery is excessively meagre, so much so in fact that stocks cannot possibly be moved off in bulk. Several hundred dozens of two-blade pocket knives were sold here by auction the other day at 1/3 per doz. They were quite up to the average of the class, and could not have been bought wholesale under 3/4 or 3/6d per dozen. A lot of common "gun shield" went off at 1/ per dozen, so that some unfortunate cutler must needs have lost money by the transaction. Best table cutlery, such as Rogers' carvers, and the better make of razors, are being worked off in slightly improved quantities, but the trade is essentially and decidedly sluggish all round, and we do not know in which direction to look for an amelioration of the existing state of affairs. Spain has enough to do with chronic insurrections to prevent trade reviving with that country. *En passant*, the regularity with which telegrams from Spain announce that "another battle has been fought, in which the Carlists signally defeated their antagonists, &c.," reminds us of Artemus Ward's humorous repetition of the Federal announcement "that the government is about to take steps to put down the rebellion," and has. I suspect, about as much foundation in fact. The steel trade here is so dull and flat that I cannot find anything in connection with it that is worth remarking upon. Work appears to be still falling off—"fading, still fading away"—in almost every department, the Bessemer houses being the single exceptions to this rule. They are fairly employed, but are not so busy by any means as they have been. So far, however, there is no cause to grumble in that respect.

BIRMINGHAM, STAFFORDSHIRE AND WALES.

At Birmingham the coppersmiths have advanced prices 1d. per pound, and have reduced discount by 5 per cent. There is also an advance of Lancashire stock locks, effected by reducing discounts 10 per cent. Staffordshire iron is nominally unaltered in price, details being as under: Ordinary bars, £12 to £12. 10; marked bars, £14; Earl Dudley's, £14. 12/6; rivet iron, common, £13 to £14; best rivet iron, £15 to £15. 10/; best best, £16. 10/; nail rods, £12 to £14; slit rods, £13. 5/ to £15. 5/; best matched slit rods, £14. 5/ to £15. 15/; charcoal slit horse nail rods, best, £23; boiler plates, £15. 10/ to £17; ordinary hoops, £13. 10/ to £15. 10/; sheets, to 20 W. G., £14. 10/ to £17; Bessemer sheets, to 20 W. G., £22; charcoal sheets, up to and including, £22. 10/ to £23; E. P. & W. Baldwin's B. sheets, £20; B. B., £21; B. B. B., £22. 10/; charcoal (best), £29. 10/; E. B., £31. 10/; angles, common, £13 to £15; best, £15; best best, £16. 10; scroll, £13; T iron, £14 to £14. 10/; best best charcoal bars, £22; boiler rivet iron, £16; charcoal, £24. 10; best horse-shoe iron, patent, £15 to £15. 10/; and band, £13. 5/. There is really very little doing, the limited demand being further checked by the uncertainty as to wages, and the general irregularity of the market just prior to quarter day. The hardware trades of Birmingham and Wolverhampton are in a much more healthy condition than the iron trade, the bulk of those industries being, on the whole, fairly well employed. The brass, jewelry, bedstead, lamp, gun, lock, saddlery and fancy trades are doing a moderately large business on West Indian, African (Cape, &c.), Australian, Indian and South American orders, and are understood to have good future prospects. The electro-platers of both Birmingham and Sheffield are experiencing steady good trade, both for the home, Continental, Australian and West Indian markets. This is also the case with the japanners, tin plate and hollow ware manufacturers of the "Brummagem" district. Advices from South Wales report that there is rather more doing in rails at some of the principal establishments. Last week the consignments were: Rhymney, 1000 tons rails to Ibrail; Dowlais, 800 to Tagaurog and 560 to Stockholm; Ebbw Vale, 2070 tons to Calcutta; Llynvi and Cyfarthfa, two small cargoes of bars to Constantinople; Nantyglo and Blaina, 700 tons rails to Sweden; Blaenavon, 412 tons to Santander; Landore Siemens Steel Works, 1310 tons of steel rails to Boston and New York; and Tredegar, 330 tons to Oporto, beside which 400 boxes of tin plates were despatched to Lisbon by Madge & Co., of Swansea. The inquiry for tin plates is good, and prices are firm.

METALS.

Metals, generally speaking, are quiet, copper, lead, and zinc, having declined since last advices to you. *Iron* thus speaks of the week's transactions.

Copper.—The market has been very quiet. The sales reported here were: Thursday, 150 tons Chili bars, g. o. b., at £77, cash, and 25 tons at £77. 2/6, cash, 50 tons at £78. 10/, and 50 tons at £78. 15/, with three months. In Australian, 10 tons Wallaroo sold at £88 for cash. Friday, 50 tons Chili bars, g. o. b., sold at £76. 10/; and in Australian, 25 tons Wallaroo at £87, both for cash. Saturday, the only sales were 100 tons Chili bars, g. o. b., at £76. 10/, cash. Monday, there was no alteration in cash prices for Chili bars; 25 tons, g. o. b., sold at £78, with three months. Tuesday, 40 tons Chili bars, g. o. b., sold at £26. 10/; but when it transpired that 125 tons were sold at Liverpool at £26, the market receded, and 25 tons were sold at £26. In Australian, 20 tons Wallaroo sold at £87, sharp cash. Wednesday, 50 tons Chili bars, g. o. b., sold at £76. 10/; and in Australian, 25 tons Wallaroo at £87, both cash.

Tin.—The market has been steady, but not much business doing. At the Dutch Trading Company's sale, on Wednesday, 19,400 slabs of Banca sold at 53½ fr. to 57 fr., averaging 55 fr. 35c., about equal to £96 here; and 3100 slabs Billiton, at an average, 53 fr. 75c., or about £92 in London. The sales reported here were: Thursday, Straits £94; 5 tons Australian fine sold at £92 for cash. Friday, no change in the price of Straits; 5 tons Australian sold at £92. 10/. Saturday, 30 tons Straits sold at £93, to be delivered at the rate of 5 tons per month. Monday, 15 tons Straits sold at £94; 10 tons Malacca at £93. 10/, both for cash, and 15 tons Straits at £93. 10/, for May. Tuesday, 5 tons Straits sold at £94; 100 slabs Banca at £100; and 10 tons Australian at £92, all cash; also for May delivery, 10 tons bars at £92. Wednesday, 5 tons Straits sold at £94, and 3 tons at £93. 10/, both cash. *Lead* has been dull, prices lower than last week. *Zinc.*—The prices have receded; 105 tons London rolled sold at £27 to 27. 10/. *Spelter.*—50 tons common Silesian sold at £22; English is quoted at £22 15/ to £23. *Quicksilver* firm at £19. 15/.

London Metal Market.

(From The Mining Journal.)

		£.	s.	d.	£.	s.	d.
Copper—₱ ton.							
Best Selected		88	0	0	90	0	0
Tough Cake & Tile		85	0	0	88	0	0
Sheathing and Sheets		93	0	0	94	0	0
Bolts		96	0	0	98	0	0
Bottoms		97	0	0	99	0	0
Old		85	0	0	—		
Burra Burra		87	0	0	88	—	
Wire	₱ lb.	0	1	0¾	—		
Tubes	"	0	1	0¾	0	1	1
Brass—₱ lb.							
Sheets		0	0	10	0	0	11
Wire		0	0	10¾	—		
Tubes		0	0	11¾	0	0	11⅝
Yellow Metal Sheathing		0	0	8¾	0	0	8⅞
Sheets		0	0	8	—		
Spelter—₱ ton.							
Foreign on the spot		23	10	0	—		
" to arrive		23	10	0	—		
Zinc—₱ ton.							
In Sheets		30	0	0	31	0	0
Quicksilver—₱ bottle.		20	0	0	—		
Tin—₱ ton.							
English Blocks		95	0	0	—		
Ditto Bars (in brls.)		96	0	0	—		
Ditto Refined		98	0	0	—		
Banca		100	0	0	nom.		
Straits		91	0	0	94	0	0
Tin Plates—† ₱ box.							
IC Charcoal	1 qual†	1	17	0	1	19	0
IX "	1 qual.	2	3	0	2	5	0
IC "	2 qual.	1	15	0	1	17	0
IX "	2 qual.	2	1	0	2	3	0
IC Coke		1	9	0	1	11	0
IX "		1	15	0	1	17	0
Canada Plates	₱ ton.	19	0	0	—		
" at works		18	10	0	—		
Iron—₱ ton.							
Bars Welsh, in London		12	0	0	—		
" to arrive		11	7	6	11	15	0
Nail Rods		12	5	0	—		
Nail Rods, Staff'd in L'don		12	10	0	—		
Bars		12	10	0	13	0	0
Hoops		13	15	0	15	0	0
Bars at Works		11	0	0	—		0
Hoops ditto		12	15	0	14	0	0
Sheets, single, and plates		14	0	0	15	10	0
Pig, No. 1, in Wales		5	0	0	5	10	0
Refined metal ditto		7	0	0	8	0	0
Bars, common ditto		10	5	0	11	0	0
Do, merchant, Tyne or Tees		11	0	0	11	10	0
Ditto, Railway, in Wales		9	5	0	10	0	0
Ditto, Swedish, in London		18	0	10	19	0	0
To arrive		18	0	0	18	10	0
Pig, No. 1, in Clyde		5	0	0	5	5	0
Ditto, f.o.b., Tyne or Tees		4	10	0	5	10	0
Ditto, Nos. 3, 4, f.o.b		—			—		
Railway Chairs		5	0	0	5	5	6
" Spikes		12	10	0	14	0	0
Indian Ch'coa Pigs in L'don		10	0	0	12	—	
Steel—₱ ton.							
Swedish, in kegs (rolled)		—			—		
Ditto (hammered)		20	10		21	—	
Ditto, in faggots		21	10	0	—		
English, spring		23	0	0	25	0	
Lead—₱ ton.							
English Pig, common		21	10	0	22	0	0
Ditto, LB		22	0	0	—		
Ditto, WB		23	10	0	—		
Ditto, Sheet		24	0	0	—		
Ditto, Red Lead		23	10	0	—		
Ditto, White		30	0	0	32	0	0
Ditto, Patent Shot		26	10	0	27	0	0
Spanish		20	0	0	20	5	0

* At the works 1s. to 1s. 6d. per ton less. Terne plates 2s. per box below tin plates of similar brand. ‡ Nominal †Add 6s. for each X

A Manufacturers' Association in St. Louis.

The manufacturers of St. Louis have organized an association for their mutual benefit and the benefit of the community. The following is an abstract of the constitution:

Whereas, The manufacturing interest of the city of St. Louis has assumed such proportions as to be one of the first elements of the growth and prosperity of the city; and

Whereas, An urgent necessity exists for a more thorough and complete knowledge of the nature and extent of said interest, a more intimate acquaintance among the individuals interested therein, a greater concert of action among them in watching over and guarding against the unjust discriminations which have been and are now being made by the city, county and State governments, by laws, taxation and impositions upon manufacturers and manufacturing; and that said interest may maintain its position and continue to aid the growth and development of St. Louis and the State of Missouri, it is deemed advisable and necessary that there should be an organized association of all persons engaged in manufacturing industries in the city of St. Louis. Now, therefore, recognizing the necessity and importance of an organized body of the manufacturers of St. Louis city and county, the undersigned hereby associate under the name of the St. Louis Manufacturers' Association.

Article first sets forth, as the objects of the association, to improve the acquaintance and bring into close communion those engaged in manufacturing in St. Louis. To gather and compile information and statistics relative to the establishment, growth and extent of the various manufacturing industries of the city and State, and to present and keep the same advantageously advertised to the business world. To watch the course of legislation and prevent injustice being done to the manufacturing interests of the city and State by unjust laws, and to guard the joint interest of our manufacturers from all harmful measures. To aid with information as to location, price of real estate, labor, fuel, etc., in the establishment of any and all manufacturing enterprises desiring to locate among us. To promote harmony and good feeling between employers and employes. To encourage and aid in measures for bettering the condition of the working classes, in securing cheaper and better dwellings, and encouraging frugality and thrift among them. To consider, investigate and discuss any questions, subjects and measures of general interest to manufacturers as a class. And in general to promote the best interests of the manufacturers of St. Louis, and encouraging the growth of manufacturing in our midst.

All persons, proprietors, members of firms and officers of corporations engaged in the business of manufacturing in the county of St. Louis, of undoubted standing, may become members of the association.

The annual fee for membership shall be, for each establishment doing a business of less than $50,000 per annum, $5, and for those doing more than this amount, $10.

The following firms then affixed their signatures to the constitution:

Shickle, Harrison & Co., Excelsior Manufacturing Company, Helmbacher Forge and Rolling Mills, St. Louis Shot Tower Company, Collier White Lead Company; Appleton, Meier & Co.; Chouteau, Harrison & Valle; Girard B. Allen & Co., Buck & Wright, Southern White Lead and Color Works, St. Louis Glass Works, Hugh M. Thompson & Co., Evans & Howard, Bain & Pegram, Adolphus Meier & Co., Belcher Sugar Refining Company.

The association then went into an election for officers to serve for the ensuing year, which resulted as follows: President, Gerard B. Allen; vice-president, Thomas Richeson. An executive committee, secretary and treasurer, are yet to be elected.

The Mineral Resources of Texas.

We take the following from a recent report on the mineral resources of Texas:

IRON ORE.

The iron deposits of Northwestern Texas are of the most remarkable character, equaling in extent and richness those of Sweden, Missouri, New Jersey, and New York. They include almost every variety, magnetic, spathic, specular and hematite ores. The largest deposits of magnetic iron ores are situated in Mason, Llano, and more western counties. Immense loose masses of ore lie scattered over the surface, which have been upheaved by igneous agencies from unknown depths below. Most of these deposits are in true veins. As no true metallic vein has ever been traced downward to its terminaton, the supply is inexhaustible. The analysis of an average specimen gave 96·890 per cent. of oxide of iron, with 2·818 per cent. of insoluble silicious substances, proving it to be magnetic oxide, which will yield 74·93 pounds of metallic iron, to the 100 pounds of ore.

COAL.

The coal-bearing rocks of Texas occupy an area of not less than 6000 square miles, embracing the counties of Jack, Young, Palo, Pinto, Eastland, Brown, Comanche, Callahan, Coleman, and extending to the Territory of Bexar. The rocks contain the characteristics belonging to the coal measures of Missouri and other Western States. In general appearance this coal resembles that of Belleville, Illinois. The analysis gives: Fixed carbon, 52 per cent.; volatile matter, 36 per cent.; ashes, 3 per cent. It cokes with a great flame, without changing its form. The development of this valuable mineral is destined to be of great importance to the State.

Anthracites, lighter and more brittle than those of Pennsylvania, have been found in various parts of the State, but I had no opportunity to visit the localities. Lignites, tertiary, and other coals of more recent origin, occupy an area of 10,000 square miles—in connection with the true formation—at many points on the Rio Grande, in Webb, Atoscosa, and Frio counties. They are mostly soft, sulphurous and ashy, but superior to German brown coals.

COPPER.

Copper, covering as it does a large area of country, is almost inexhaustible, and will afford a vast fund of wealth for generations to come. A large portion of the counties of Archer, Wichita, Clay, Haskell, Territory of Bexar, counties of Pecos and Presidio, extending to the Rio Grande, is filled with immense hills of copper ore, some of which has been thoroughly tested, and will yield on the average 55·40 per cent. of metal. Through some particular localities specimens have been found as rich as 68 per cent., containing beside some silver, oxide of iron, etc.

Explorations of the copper veins over the summits and sides of the hills, justify the conclusion that within the extent of one degree of longitude, along the little Wichita River, hardly a tract of 160 acres could be found without large accumulations of ore upon the surface. The vein leads are parallel with the strata, but here is sufficient evidence that they partake of the nature of true veins.

LEAD AND SILVER.

These two metals are always associated together in this State. The calciferous sand rock, which is the lead-bearing rock of Missouri, abounds in Texas, and the varieties found in it here are carbonate of lead, sulphuret of lead, and molybdate of lead. The former two always contain such large quantities of silver as to be considered silver ore. A sample from a three feet vein in Llano county, gave a yield of 286 ounces of silver, 74·45 per cent. of lead. It is the carbonate of lead in combination with the sulphuret, and, owing to the large percentage of the former, will be very easily reduced. The indications are very favorable for a large quantity and excellent quality of ore. With a well developed mining industry established here, no other country could compete with this region, so far as regards fuel, construction timber, and materials for building and sustaining a railroad.

MANGANESE, COBALT, NICKEL AND BISMUTH.

Leads of manganese, cobalt, nickel and bismute are often met with. The copper ore contains only 25 per cent. of impurities, is far superior to the ferro-sulphuret of copper, or copper pyrites generally worked for in England, and in native copper ores, as found at Lake Superior. It is easily smelted, and the strata in which it is found is more easily excavated than any other in which copper ores occur.

PETROLEUM.

Petroleum springs occur over a space of about fifty square yards in Hardin county, and it is probable that larger supplies may be obtained by boring.

A New Iron Works at Milwaukee.

Messrs. Bayley & Greenslade, proprietors of the Union Iron Works, at Milwaukee, Wis., have just completed a new and commodious establishment, which is an important addition to the city. The new works comprise the foundry, 40x70 feet, connected with which are an engine room, cupola house, and a number of side buildings, the blacksmith shop, 40x60, and the finishing shop, which is 36x70 feet, and contains three stories and basement, the latter supplemented by extensive vaults under the sidewalk. The third story of the finishing shop is the pattern room. From an inspection of the stock stored here, one gets an idea of the extent and variety of a business which has so many departments as never to know what a dull season is. There are, in the first place, all varieties of building work, cast and wrought, from a heavy column to a light ridge cresting. Then jail work, such as vaults, vault doors, cells, bolt work and blacksmith's work; then stair work; then cemetery work, fences and railings, garden seats, vases and statuary, and finally stable fittings. Many of these articles are designed at the works, and others are prepared from the drawings of architects.

The number of hands employed will average sixty. An enumeration of the most important works completed by the concern includes the wrought and cast work of the new court house—dome, columns, porticos and railings to the amount of $75,000; the vaults of the First National bank of this city, jail work at Winona and Fairibault, Minn., at Grand Haven, Grand Rapids and Bay City, Mich., La Grange, Indiana, and Jefferson, Wis.; a light house at Grosse's Point, Ill., the insane asylum work at Elgin, Ill., and Oshkosh, Wis., and gas works at South Bend, Ind., and Racine and Janesville, in this State. They have under contract at present the jail work for Dunn county, Wis., Nicollet county, Minn., and 70 new cells for the House of Correction at Milwaukee. They are also engaged upon the insane asylum at St. Peters, Minn. With all this they have done some of the most valuable work upon the new water works buildings at North Point. The roof for the engine house, which is now being put on, is the largest iron roof in Wisconsin. It is a hip roof 88 feet long, 17 high and with a span of 66 feet. It is composed of angle and bar iron and weighs 35 tons. It was designed by Mr. Wm. Melms.

Needles.

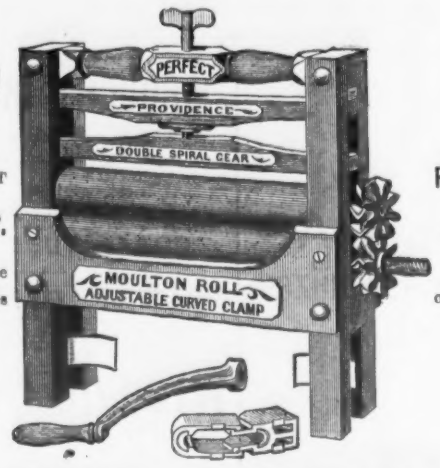
The European manufacture of needles was originally carried on in Spain, yet it is to Germany that the mother country is indebted for them. When first exported from Germany they were called "Spanish" needles. They were earliest made in England in 1565, their manufacture, however, languished until the year 1650, when it revived. During the reign of Henry VIII. the London Needle Makers' Company was established and its charter was confirmed by the Protector in November, 1656, and subsequently by Charles II. in 1664. It is rather remarkable that so important a branch of industry did not earlier receive more decided encouragement. As now manufactured the piece of wire, which is ultimately transformed into a needle, is subjected to no less than thirty distinct and painstaking processes before it reaches completion. In the first place we see the wire in huge coils, which are cut by immense shears. The wire is again cut into the different sizes required, each length being so divided as to make two needles. Several thousands of these lengths are then placed within two rings, about six inches in diameter, made of rough wrought iron, and are then straightened by being rubbed with a hot iron. The wire is next pointed at either end, a beautiful process to witness, innumerable sparks being emitted during the operation, caused by the friction of the grindstone and wire, and which resemble a shower of golden fire. Some idea of the rapidity with which this is effected may be formed when it is stated that one man is expected to point 22 packets of 50,000 each in a week. The next process is that of brightening the middle portion of the wire, previously to stamping, that is roughly shaping the head and eye, without actually perforating the wire. "Eying," as it is called, is the next stage, and is done by girls with extraordinary rapidity and accuracy; a smart hand can punch as many as 40,000 in a working day of ten hours. They are now splitted, which consists in two thin wires being thrust through the eye, this operation is always allotted to boys. The reader must now suppose the needles in "sheets" which have next to be filed, that is, the flange formed by punching the eye is filed off, the sheets are broken in two, now first forming the distinct needle. The heads are now again filed and the needles then rubbed and hardened; next washed and "evened," that is they are sorted into particular lengths, and are now ready for "tempering," perhaps the most delicate operation of all, and which is always superintended by one of the firm. Picking, straightening and scouring follow, which latter operation, by the way, comprises about fourteen different processes and extends over a fortnight.

Artificial Flowers of Tin.

In a recent number of a Berlin journal we find the following directions for making accurate copies of natural flowers and leaves from ordinary sheet tin: The method is somewhat similar to that employed for wax flowers, but the dyes, of course, require to be made of stronger material. The leaf, or petal to be copied, is first oiled on one side and then laid lightly upon some dry plaster Paris, or very fine sand, in such a manner that the oiled surface is uppermost. A little bank of clay is built around it, and the mixture of plaster Paris and water poured in, care being taken to remove the air bubbles with a soft brush. Instead of plaster Paris paste, melted stearine, mixed with powdered gypsum, may be employed where the leaves are quite thick and strong. Very delicate leaves must first be painted over with a brush dipped in soap water, after which several thin layers of plaster Paris are applied with a brush, fine wire being introduced if necessary to give it firmness. The leaves thus prepared are either oiled and used to make plaster casts, or they may be coated with black lead and have copper deposited upon them by electricity. The upper stamp having been formed, the matrix, or lower stamp, is easily made from this. The tin is first cut in the required shape, either by hand or by a suitable die, and then pressed into the required shape between iron or steel stamps, cast after the plaster models just described. Each of the pieces required to form a flower, having been prepared separately, they are carefully soldered together, a stem and leaves added, and the whole object so bent and twisted as to avoid the appearance of stiffness. They may finally be painted with the natural colors, and varnished. These tin flowers are especially adapted to fountains and similar purposes.

PROVIDENCE TOOL CO.,

The Providence Wringer.



Metal Journal Casings.

NO WEAR OUT HINGE CLAMP.

Covers more surface on all kinds of articles than any in market.

ALL WHITE Rolls, Double Cogs, V Shape.

Cannot be thrown out of gear on either end.

H. B. NEWHALL, Agent, No. 11 Warren St., N. Y.

WM. H. HASKELL & CO.,

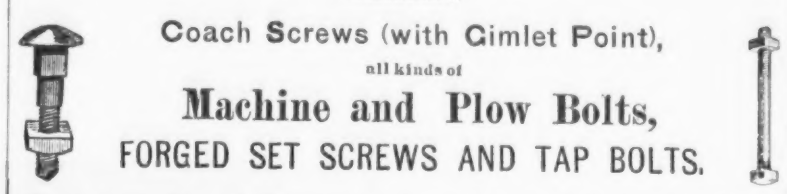
Pawtucket, R. I.,

Manufacturers of

Coach Screws (with Gimlet Point), all kinds of

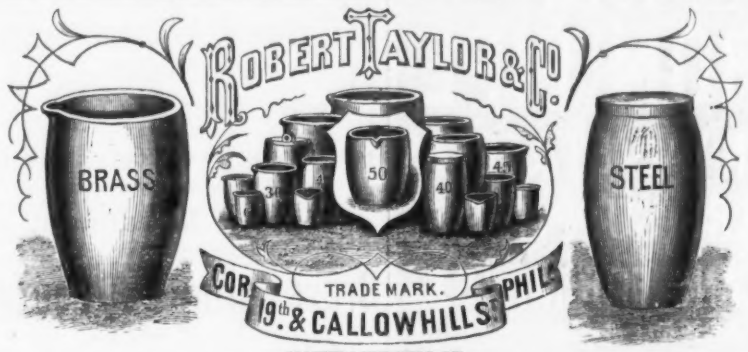
Machine and Plow Bolts,

FORGED SET SCREWS AND TAP BOLTS.



Warerooms, No. 11 Warren St., New York, H. B. NEWHALL, Agent.

Address your Orders to H. B. NEWHALL, Agent, No. 11 Warren Street, N. Y.



MANUFACTURERS OF

BLACK LEAD CRUCIBLES

Of all Sizes and Forms for melting

Steel, Brass, Gold, Nickel and all kinds of Metals.

Mr. Robert Taylor, who was for seven years the head of the late firm of Taylor, Strow & Co., and who is a practical mechanic, and familiar with all the details of the manufacture of Crucibles, attends personally to our manufacturing department. We would, therefore, respectfully solicit a continuance of the favors hitherto extended to him.

ROBERT TAYLOR & CO.,

No. 1900, 1902, 1904 & 1906 Callowhill, St., Philadelphia.

General Agents. { MERCHANT & CO., 507 Market Street, Philadelphia. PARK & CO., 122 Second Avenue, Pittsburgh, Pa.

STROW, WILE & CO.

(Formerly Taylor, Strow & Co.)

Phila. Black Lead Crucible Works,

Nos. 1330, 1332 & 1334 Callowhill St. Philadelphia.

MANUFACTURERS OF

SUPERIOR BLACK LEAD CRUCIBLES

For Melting Steel, Brass and other Metals.

And Crucibles for Hardening Files.

Also any size or shape made for Chemical, Assaying and Refining Purposes.

Mr. R. Taylor is no longer connected with us in the Black Lead Crucible business. The Manufacturing Department will remain and continue under the supervision of the former experienced and skillful workman, Frederick Strow. Thankful for past favors, we would solicit a continuance of the same for the new firm.

STROW, WILE & CO.

GENERAL AGENTS:

Messrs. HALL & CARPENTER, 709 Market St., Phila.

PENNSYLVANIA

CRUCIBLE WORKS.

ROSS & HOFERKAMP,

Nos. { 1438, 1440, 1442 & 1444 North Sixth Street, 1439, 1441, 1443, & 1445 Marshall Street.

OFFICE ON SIXTH STREET,

PHILADELPHIA, PA.,

MANUFACTURERS OF

BLACK LEAD CRUCIBLES.

Warranted equal to any in the market, and sold in quantities to suit purchasers.

Empire. Monitor.

The Simplest, Strongest, Easiest Running

LAWN MOWERS

in the market.

All who need a Lawn Mower, either for a small or large Lawn, should examine the merits of Walker's Patents, **Empire** and **Monitor.** They are simple in construction and very light, not fatiguing the operator.

Send for *Circular.*

Price of Empire, (14 in. cut) **$20.** **Price of Monitor,** (No. 0, 10 in. cut) **$15**; No. 1, (14 in. cut) **$20.**

Agents wanted in every Town.

MANUFACTURED BY

BARLOW & WALKER, Sing Sing, N. Y.

Agents in Cincinnati, HOWELL GANO & CO.

Agents in Boston, BUBIER & CO., 23 Exchange Street.

LINFORTH, KELLOGG & CO.,

Wholesale Hardware House

AND

Manufacturers' Agents,

Nos. 3 & 5 FRONT STREET, SAN FRANCISCO., CAL.

Sole Agents for the Pacific Coast, for the following leading Goods.

The Powell Tool Co.'s Axes, Edge Tools, Picks, Mattocks, &c.

The Sandusky Tool Co.'s Planes, Plane Irons, Carpenters', Cabinet Makers' and Coopers' Tools.

The Black Diamond Files, G. & H. Barnett, Manufacturers, Philadelphia.

Rumsey & Co.'s Pumps, Hydraulic Rams, Steel Amalgam Bells, Fire Engines, &c.

The Woolworth Handle Works, Axe, Pick, Sledge and other Handles.

ALSO AGENTS FOR

The Enterprise Mfg. Co.'s Coffee and Spice Mills, Molasses Gates, Bung Borers, &c.

The U. S. Screw Co.'s Gimlet Pointed Screws.

The Union Steel Screw Co.'s Gimlet Pointed Steel Screws.

New York Office, 96 Chambers St., W. B. FOX, Manager.

Miller's Patent Combined Plow, Filletster & Matching Plane.

2500 ALREADY IN USE.

Manufactured by the

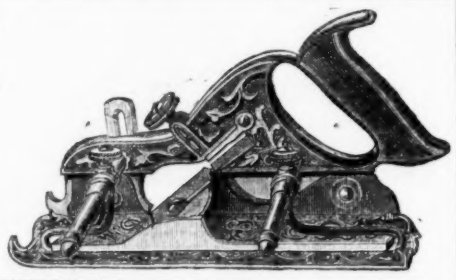
Stanley Rule & Level Co,

NEW BRITAIN, CONN.

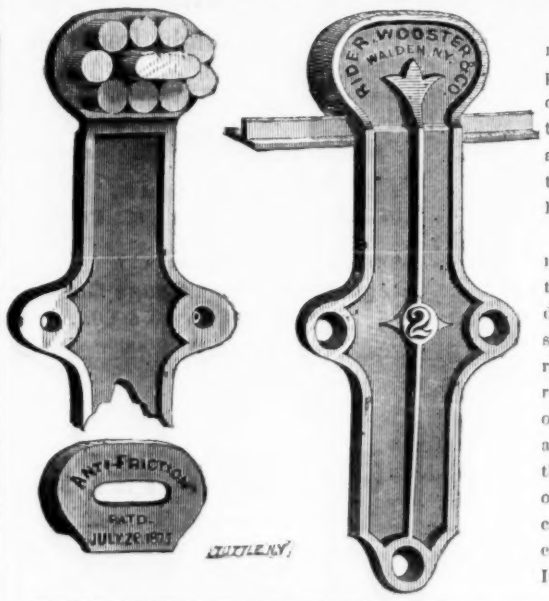
Warerooms:

35 Chambers Street, NEW YORK.

Send for Descriptive Circulars.



Anti-Friction Barn Door Hanger



This Hanger is entirely new in principle and design, and possesses marked advantages over all others, entirely obviating all the defects and annoyances hitherto experienced in the use of ordinary sheaved hangers.

In construction it is exceedingly simple, as will be seen by the cut. The weight of the door is supported by a strong stud, between which and the rail is a series of chilled iron rollers, inclosed by the front of the hanger and cap, and as these rollers pass under the stud, they are returned over it in succession. There is consequently no friction, except that of rolling surfaces. Its leading advantages are:

GREAT DECREASE OF FRICTION, moving (as determined by direct experiment) with **one-fourth the power required by any other Hanger in the world.**

Great Strength. Unlimited Durability.

No Axles and Sheaves to grind and break.

All bearing surfaces harder than steel.

Thorough protection from the weather.

It will not clog with snow and ice.

It cannot run off the track.

It causes the door to run perfectly true.

It cannot get out of order.

It is compact, Simple and Beautiful in design.

This Hanger will fit any ordinary rail, but our rail is preferable, from the fact that it has a double flange at the bottom, so that the screws will not work out and allow it to rock or tip over.

No. 1 Hanger, corresponding to 4, 5 and 6 in. Sheaves or Rollers..... per pair, $1·25
No. 2 " " 6 inch and upward..... " 1·50
One Dozen Pairs in each case.—dis 30 per cent.
RAIL, with Double Flange.....per foot, 7 cents.
200 *feet in each case.*—dis 30 per cent.

RIDER, WOOSTER & CO.,

Walden, Orange Co., New York.

THE READING BOLT & NUT WORKS.

J. H. STERNBERGH

READING PA.,

Manufacturer of all kinds of

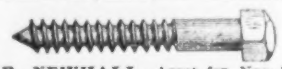
Machine Bolts, Bolt Ends,

RODS for Bridges & Buildings,

HOT PRESSED NUTS,

Washers, Coach Screws, Refined Iron, &c.

Manufacturing my own stock of iron, I am able to control quality, and fill orders promptly, with a very superior article, at the lowest possible price. Send for Price List.



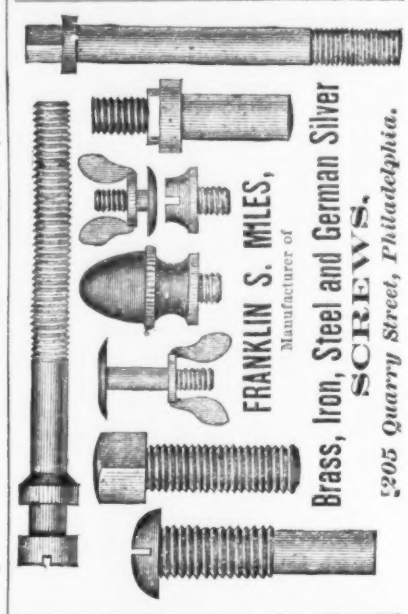
H. B. NEWHALL, Agent for New England States, New Jersey and Eastern New York, 11 Warren Street, New York.

J. AUSTIN & CO.,

168 Fulton Street, N. Y.

SOLE AGENTS FOR

SCRIPTURE'S OILERS.



Jos. Scheider & Co.

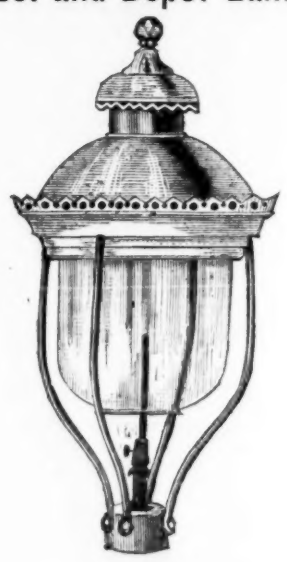
Manufacturers of

Japanned & Stamped

TIN WARE,

MINER'S PATENT

Street and Depot Lamps.



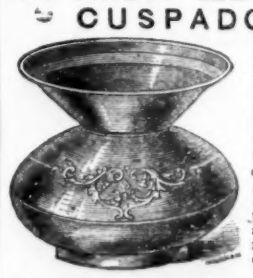
AND

PATENT SELF-RIGHTING

CUSPADORES.

THE PATENT SELF-RIGHTING

CUSPADORE



Is superseding all others. Being made of **METAL** it will not break, and as the lower part is **CAST-IRON,** will not corrode as quickly as other articles composed of sheet-metal for the same purpose, and if upset, it rights itself immediately.

58 Beekman St., N. Y

FACTORY PORTLAND, CONN.

Pipe, Fittings, &c.

Thomas T. Tasker, Jr. Stephen P. M. Tasker

MORRIS, TASKER & CO.,

PASCAL IRON WORKS, Philadelphia,

TASKER IRON WORKS, New Castle, Del.,

Office, Fifth and Tasker Streets, Philadelphia.

Office and Warehouse, No. 15 Gold Street, New York.

Office and Warehouse, No. 36 Oliver Street, Boston.

MANUFACTURERS OF

WROUGHT IRON WELDED TUBES,

Plain, Galvanized and Rubber-Coated, for Gas, Steam and Water.

Lap-Welded Charcoal Iron Boiler Tubes.

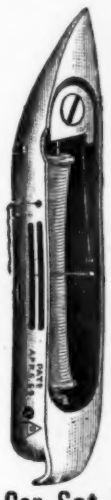
Oil Well Tubing and Casing, Gas and Steam Fittings, Brass and Steam Fitters' Tools, Cast Iron Gas and Water Pipe, Street Lamp Posts and Lanterns, Improved Coal-Gas Apparatus, Etc.

The Billings & Spencer Co.,

MANUFACTURERS OF

The Billings Patent Solid

SEWING MACHINE SHUTTLE.



ALSO,

The Barwick Pipe Wrench.

And all Descriptions of STEEL and IRON

DROP FORGINGS

For Machine Handles, Lathe Wrenches, Milling Machine Cranks, Thumb Screws, and parts of Guns, Pistols, Sewing Machines and Machinery Generally.

We also manufacture, to order,

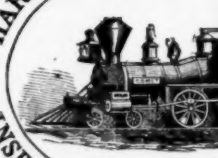
Cap, Set, Machine & Gun Screws, of Iron, Steel or Brass.

*** Price List and "Cuts of Goods manufactured by us sent to any order on request.

BILLINGS & SPENCER CO.,

Lawrence Street, Hartford, Conn.

HARTFORD STEAM BOILER INSPECTION AND INSURANCE CO.



CAPITAL - - $500,000.

Issues Policies of Insurance, after a careful Inspection of the Boilers

COVERING ALL LOSS OR DAMAGE TO

Boilers, Buildings and Machinery,

ARISING FROM

STEAM BOILER EXPLOSIONS.

The Business of the Company includes all kinds of STEAM BOILERS.

Full information concerning the plan of the Company's operations can be obtained at the

COMPANY'S OFFICE, HARTFORD, CONN.,

or at any Agency.

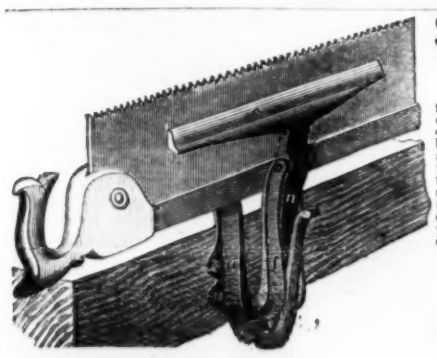
J. M. ALLEN Pres. *W. B. FRANKLIN, Vice-Pres.* *J. B. PIERCE, Sec'y.*

Board of Directors:

J. M. ALLEN, President.
LUCIUS J. HENDEE, Pres't Ætna Fire Ins. Co.
FRANK W. CHENEY, Ass't Treas. Cheney Brothers Silk Manufacturing Co.
CHARLES M. BEACH, of Beach & Co.
DANIEL PHILLIPS, of Adams Express Co.
GEO. M. BARTHOLOMEW, Pres't Amer. Nat'l Bank.
RICHARD W. H. JARVIS, Pres't Colt's Fire Arms Manufacturing Co.
THOMAS O. ENDERS, Sec'y Ætna Life Ins. Co.
LEVERETT BRAINARD, of Case, Lockwood & Brainard.
GEN. WM. B. FRANKLIN, Vice Pres't Colt's Pat. Fi Arms Mfg. Co.
AUSTIN DUNHAM, Pres't Willimantic Linen Co.
GEO. CROMPTON, Crompton Loom Works, Worcester.
EARL P. MASON, Pres't Prov. & Wor. R. R., Prov.
WILLIAM ADAMSON, of Baeder, Adamson & Co., Philadelphia.
WM. B. BEMENT, of Wm. B. Bement & Co., Ph'la.
S. P. M. TASKER, of Morris, Tasker & Co., Philadelphia.
C. W. FREELAND, Treas. Dwight Manufacturing Co., Boston.

THEO. H. BABCOCK, Manager,

New York Branch, No. 1 Park Place.



Stearns' Patent Saw Vise

No. 1.

This simple and effective device for holding saws for the operation of filing is too well known to require more than a passing description here. Its well earned popularity during the long period that it has been upon the market, establishes its superiority over all other saw vises. It is the only saw vise in the market that is so constructed as to spring or strain the saw, preventing vibration and effecting a great saving in files. The vise can be readily attached to a bench, and being small and light, can be conveniently carried about from place to place—in fact, filling a want long felt by saw filers and wood workers generally. Send for Illustrated Catalogue to

GEO. N. STEARNS & CO.,

Syracuse, N. Y.

Hubbard & Curtiss Mfg. Co.,

New York Agents.

Pipe, Fittings, &c.

McNab & Harlin Mfg. Co.,

MANUFACTURERS OF

BRASS COCKS

For STEAM, WATER and GAS.

Wrought Iron Pipe & Fittings, Plain and Galvanized

PLUMBERS' MATERIALS.

Illustrated Catalogue sent by express to the Trade on application.

Factory, Paterson, N. J. 56 John Street, N. Y.

PANCOAST & MAULE

227 Pear St.

PHILADELPHIA.

WROUGHT IRON PIPE

FITTINGS, BRASS & IRON VALVES & COCKS

TOOLS & STEAM FITTERS SUPPLIES &c.

PIPE CUT & FITTED TO PLANS FOR MILLS &c.

SUCCEED MORRIS TASKER & Co. AS

CONTRACTORS

FOR HIGH & LOW PRESSURE STEAM HEATING APPARATUS FOR ALL CLASSES OF BUILDINGS.

Send for Illustrated Catalogue.

National Tube Works Co.,

BOSTON, MASS. and McKEESPORT, PA.,

MANUFACTURERS OF

Best Quality Lap Welded Iron Boiler Tubes,

STEAM AND GAS PIPE,

Artesian Oil and Salt Well Tubing and Casing,

With Patent Protecting Coupling;

Mack's Patent Injector for Feeding Boilers.

JAMES C. CONVERSE, President, McKeesport. WM. S. EATON, Treasurer, Boston.

New York Office and Warehouse 78 William cor. Liberty Street.

EATON & COLE.

Manufacturers of

Wrought Iron Pipe Fittings,

BRASS VALVES,

COCKS, TOOLS, &C.,

Sole Agency for the East.

58 John Street, NEW YORK.

Sole Agency for the Pacific Coast for

Regester's Patent Gauge Cocks,

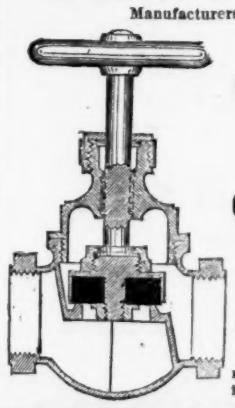
CONROY, O'CONNOR & CO.,

San Francisco, Cal.

Nelson, Finkel & Co.,

439 East 10th St., New York,

Manufacturers of



Jenkins' Patent

Compression Valves

AND

Gauge Cocks

Also,

Nelson's Patent

LUBRICATOR.

Warranted the most reliable and durable in the country.

CAST IRON PIPES

FOR WATER AND GAS.

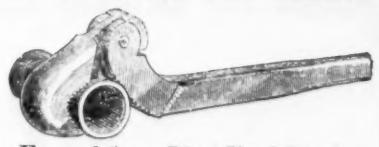
Branches Retorts, &c.

Warren Foundry & Machine Co.,

PHILLIPSBURG NEW JERSEY.

WHEATCROFT'S

SELF-ADJUSTING PIPE WRENCH.

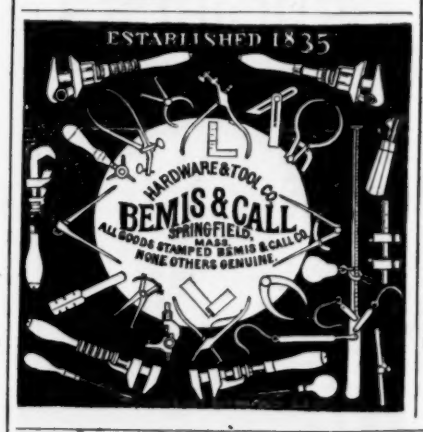


Forged from Best Tool Steel.

The dog is solid over the head of the lever bar, taking the strain off from the pin.

Each Wrench takes four Sizes of Pipe.

J. AUSTIN & CO. 168 Fulton St., N. Y.



THE CHARLES GREGG

MANUFACTURING CO.

BRASS WORK of all kinds,

FITTINGS FOR

Steam, Gas and Water

PLAIN AND GALVANIZED

WROUGHT IRON PIPE,

Nos. 62 & 64 Gold Street, NEW YORK.

Business Established, 1836. Incorporated, 1872

Send for Price List.

GRAFF TUBE WORKS.

WILLIAM GRAFF & CO.,

Manufacturers of Plain and Galvanized

Wrought Iron Pipe

For

Gas, Steam, Water, Oil, &c.,

No. 140 First Ave., PITTSBURGH, PA.

Pipe of any Size, Length or Thickness furnished to order.

WM. S. CARR & CO.

Sole Manufacturers of

Carr's Patent Plumbers' Goods

Pumps, Water Closets, Fountains, Vases, &c.

OFFICE AND WAREROOMS

106, 108 & 110 Centre Street,

Factory, Mott Haven, New York.

Wilson Bohannan,

Manufacturer of Patent

Brass Spring Pad Locks

FOR

Railroad Switches,

Freight Cars, &c.

Cor. Broadway & Kossuth St.

Brooklyn, E. D., N. Y.

F. C. HUCHTHAUSEN,

Special Partner.

ROMER & CO.,

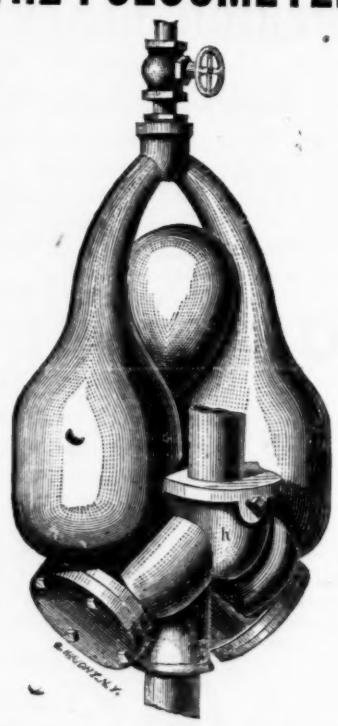
Established 1837.

Manufacturers of Patent Brass Pad Locks for Railroads and Switches. Also, Patent Stationary R. R. Car Door Locks. Patent Piano and Sewing Machine Locks.

141 to 145 Railroad Avenue, NEWARK N.J.

Illustrated Catalogues sent on application.

THE PULSOMETER.



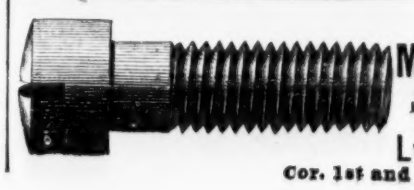
The simplest, most durable and effective Steam Pump now in use. Will pump gritty or muddy water, without wear or injury to its parts. It cannot get out of order.

BRANCH DEPOTS.

11 Pemberton Square, Boston.
1327 Market St., Philadelphia.
59 Wells St., Chicago.
Southwestern Exposition, New Orleans.
811 & 813 North Second St., St. Louis, Mo.

C. HENRY HALL & CO.,

20 Cortlandt St., New York City.



TURNED MACHINE SCREWS,

One-sixteenth to five-eighths diameter.
Heads and points to sample.
IRON, STEEL and BRASS.

Lyon & Fellows Mfg. Co.,

Cor. 1st and North 3d Streets, Williamsburgh, N. Y.

The Iron Age Directory

and Index to Advertisements.

Punching and Notching Rails.

The following is an abstract of a paper by Mr. C. P. Sanberg on "Safety of Permanent Way," which will be found interesting:

Punching Iron Rails.—Some experiments have been made by testing the relative strength against impact of extra iron rails, punched and not punched, which show that the punching does not materially weaken them, provided the holes in the web are not placed too near the rail end—no nearer than 2 in. to 3 in. Punching of iron rails is, therefore, generally regarded as quite safe and without damage to the rail, practically speaking. It is true that the nearer the end holes the stronger the joint, but the greater the risk of splitting.

Notching Iron Rails.—Experiments in great number have been executed, of which Tables Nos. III. and IV. give the results. Where a light falling test is stipulated, as in Table IV., notching is not altogether safe, particularly in a cold country where fractures may occur at the notch. As for notching the rail made from fibrous iron in the flange, Table III. shows there exists apparently no risk, inasmuch as the rail, even at the notch, does sustain the normal test, say 10 cwt.—falling 7 ft. =70 on a rail weighing 70 lb. per yard. However, with hard iron rails and suspended joints, now generally used, and with the notches, say, 1 ft. from rail end, or in the middle of rail, there is no doubt that fractures may occur, and that the following improvements suggested for steel rails should apply to iron also.

Punching Steel Rails.—Punching steel rails in the web, when the holes are placed far from the rail end, does not much diminish the strength, as direct experiments prove; but if the holes are near the end of the rail, there is undoubtedly a very considerable loss in strength, particularly if the steel is the least too hard, say containing more than one-half per cent. of carbon. The punching operation itself will sometimes in such case split the web of the rail; this is one of the causes of rails breaking in the track. Many engineers have therefore specified that the bolt holes should be drilled instead of punched, which seems less to affect the strength of the steel. Drilling is, however, a very slow operation, requiring an enormous number of machines to keep up with the manufacture, and where the quantities are large, few, if any, English steel rail makers would at present do it, even at a considerable extra price. Even when drilling is specified, the diameter of the hole is punched to half its final size, and drilled up with a rosebit afterward. Another way of making the effect of punching less destructive, is by heating or annealing the metal afterward, as well as punching the rail while hot, but this is difficult and unpractical where large quantities are produced. The simplest plan seems to be the same as that suggested for iron rails, viz., to leave at least 2 in. to 3 in. from rail end to commencement of first bolt hole, and punch the holes in the ordinary way, or, as in plan No. 2, avoid punching altogether, a plan adopted in America.

Notching Steel Rails.—A great number of experiments at different works in England, Wales and France have been made, of which table Nos. I. and II. may serve as an illustration of how greatly the strength is diminished through notching the flanges. Table No. I. shows twelve very soft unnotched rails, of which none broke, but deflected 4½ in. to 5 in. for a test of 10 cwt., falling 20 ft.; other experiments at the same place show that other rails of same section may even sustain twice that blow without breaking. Here we have thus all that can be desired in soft and uniform material most suitable for steel rails, and still taking the other half of the same rail, notching it, and ascertaining what amount of concussion it would resist in the notch, it will not resist 10 cwt. falling more than 4 ft.=40, or losing 80 per cent. of its original strength when unnotched.

Table No. II. shows a similar set of experiments with hard steel rails. The tests being about the same as with the soft rails, only give about half as much deflection. A rail with square corner notch, tested with 4 cwt. ball falling as low as 1 ft. 7 in., broke in the notch. Thus the original strength was diminished by 97 per cent. The square notch, with slightly rounded corners, is but little stronger, while the semi-circular notch, hand-made, diminishes the strength by about 50 per cent. only.

The semi-circular notch is, therefore, the least destructive, but to make it by hand would be too much loss of time where quantities are so large and labor so dear as in England.

The only likely explanation why steel rails should lose, say, 80 to 90 per cent. of their strength by notching, while iron rails do not lose more than 30 to 50 per cent., is that steel, with all its advantages over iron, is yet inferior in one respect, and that is to sustain rough mechanical treatment without suffering. For the same reason steel has not proved an advantage over iron for many other purposes requiring cutting, punching, or any treatment, cold, after it has left the rolls or the hammer, unless it is annealed, which is, in the case of rails, of practical impossibility.

The conclusions from the experiments shown by the tables, are:

1. The necessity of carefully testing the rails by concussion before they are laid.

2. That in punching rails the holes shall be placed, say, at least 2 in. or 3 in. from the end, or done away with entirely.

3. That notching of steel rails shall be either entirely abandoned as destructive to their resistance against impact, or be placed at the corners only, or as near the end as possible, and never in the middle of the rail. The ordinarily employed method for fixing iron rails to the road bed must necessarily be changed when steel is substituted, if accidents and breakages are to be entirely avoided.

TABLE No. I.—Bessemer Steel Rails.

Tests made with 57 lb. Flange Rails of soft Bessemer Steel to ascertain the loss of strength against impact through notching the flanges. Weight of ball, 10 cwt.

Rails without Notch.			Same Rails Tested in the Notch.	
Rail No.	Hight of Fall.	Deflection.	Hight of Fall.	Result.
	ft.	in.	ft. in.	
1	20	5	5 0	broke
2	20	4¾	4 0	stood
3	20	4¾	4 6	stood
4	20	4½	5 0	broke
5	20	4½	4 6	broke
6	20	4¾	4 0	stood
7	20	4¾	4 6	stood
8	20	4⅞	4 6	stood
9	20	5	5 0	broke
10	20	4⅝	4 6	broke
11	20	4⅞	4 0	stood
12	20	4⅞	4 0	stood
Average Result. Rail without notch 10 cwt. x20 ft.=200.			10 cwt.x4 ft.=40. Loss by notching steel rails 80 per cent. of original strength.	

TABLE No. II.—Bessemer Steel Rails.

Tests made with 66 lb. Flange Rails of hard Bessemer Steel to ascertain the Loss of Strength against Impact through Notching the Flanges.

Rails without Notch.				Same Rails Tested in the Notch.				
Distance of Supports.	Weight of Ball.	Hight of Fall.	Deflection.	Distance of Support.	Weight of Ball.	Hight of Fall.	Deflection.	Remarks.
ft in	cwt	ft	in.	ft in	cwt	ft in	in.	
					4	1 7	broke	*a*
					4	1 7	"	*a*
3 8	20	10	2½	3 3	4	2 7	"	*a*
					4	3 3	"	*a*
					4	1 7	stood	*b*
					4	2 3	"	*b*
3 8	20	10	2⅝	3 3	4	2 7	"	*b*
					4	3 3	broke	*b*
					8	13 0	1¾	*c*
					8	13 0	2¾	*c* 2d blow.
3 8	20	10	2½	3 3		13 0	2⅞	*c*
					8	13 0	1⅞	*c* 1st "
					8	13 0	3¼	*c* 2d "
Average Result Rail without notch 20 cwt. x 10 ft.=200.				1. Square machine-made notch 4 cwt. x 1 ft. 7 in.=6½. Loss in strength 97 per cent. 2. Similar notch with corners rounded 1-16 in radius 4 cwt. x 2 ft. 7 in.=10. Loss in strength 95 per cent. 3. Half-round notch 8 cwt. x 13 ft. =104. Loss in strength 50 per cent.				

a.—Square notch, machine made, 1 in. long x ¼ in. deep, sharp corners.
b.—similar notch to above, but with inner corners rounded.
c.—Half-rounded notches, 1 in. in diameter filed by hand.

TABLE No. III.—Extra Iron Rails.

Tests made with 70 lb. Flange Rails to ascertain the loss of strength against impact through notching the flanges. Distances of supports, 3 ft. 6 in.; weight of ball, 10 cwt.

Rails without Notch.		Same Rails tested in the Notch.		Remarks.
Hight of Fall.	Deflection.	Hight of Fall.	Deflection.	
ft.	in.	ft.	ft. in.	
		7	0 13-16	1. Notched with two notches 1 in. by 5-16 in., not opp'site each other.
		10	2 1-16 cracked	
7	13-16 1st blow	7	0 15-16 broke	2. N'tched with two same sized notches opposite each other.
10	2 in. 2d blow	10		
		7	0 ⅞ broke	3. N'ched with one same size notch only.
		10		
Average result. Rail without notch: 10 cwt. x 10 ft. = 100.		Rails with notch.	cwt. ft. 1.—10 x 7 = 70 2.—10 x 7 = 70 3.—10 x 7 = 70	
		Loss by notching extra iron rails, 30 per cent. of original strength.		

TABLE No. IV.—Ordinary Iron Rails.

Tests made with 60 lb. Flange Rails to ascertain the loss of strength against impact through notching the flanges. Distance of supports 3 ft. 6 in.; weight of ball 6 cwt.

Rails without Notch.				Same Rails Tested in the Notch.			
Hight of Fall.		Deflection.	Remarks.	Hight of Fall.		Deflection.	Remarks.
ft.	in.	in.	blow	ft.	in.	in.	blow
6	6	⅜	1st	5	0	¾	1st
8	0	1	2d	5	0	broke	2d
10	0	broke	3d				
6	6	11-32	1st	5	0	broke	1st
8	0	broke	2d				
6	6	5-16	1st	4	6	3-16	1st
8	0	⅜	2d	5	0	broke	2d
8	0	broke	3d				
6	6	5-16	1st	4	6	broke	1st
6	6	broke	2d				
6	6	5-16	1st	4	6	3-16	1st
8	0	⅜	2d	4	6	broke	2d
8	0	broke	3d				
7	0	⅜	1st	4	0	3-16	1st
8	0	1	2d	5	0	broke	2d
8	0	broke	3d				
7	0	⅜	1st	4	6	¾	1st
7	0	⅜	2d	4	6	broke	2d
7	0	broke	3d				
Average Result. 6 cwt. x 8 ft. = 48.				6 cwt. x 4 ft. = 24. Loss by notching ordinary iron rails 50 per cent. of original strength.			

Mr. James Oliphant, of Chicago, has invented a very useful heating stove, which has been used on the Pittsburgh, Fort Wayne & Chicago Railway for about two months, and has lately been put on a Chicago & Northwestern car: It is a cylinder in form, about 4 feet high and 2 feet in diameter. The bottom of it is a tank holding about four gallons of water. In this tank is a valve which keeps shut while the stove keeps its perpendicular, but when it loses that, the valve opens and the water pours out into the stove, completely putting out the fire. About a foot above the tank is the grate, and above it the fire, as in an ordinary stove. Unlike most stoves, the atmosphere in the car is not overheated, air being introduced from the outside in a pipe, which is regulated by two dampers, admitting as much as is required. The stove is encased within a sheet iron jacket, as it is called, leaving about six inches between the stove and it. Here the fresh air comes in, and is heated, and then passes into pipes that run down the sides of the car, with a register under each seat. The warm air thus introduced into the car is pure, and comes in near the floor, keeping the feet warm and not heating the air in the upper part of the car, as common stoves do.

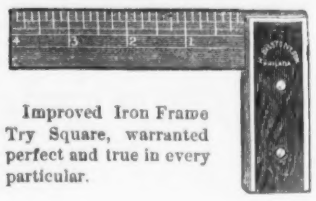
Metallurgical.

Hand Saw with Moveable Back—can be used with equal facility for either Hand or Back Saw.

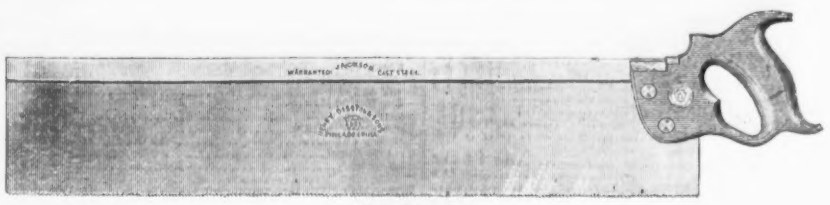
Pork Packers' Saw.

Improved Pruning Saw and Knife, Patented August 29, 1873.

Table Saw.

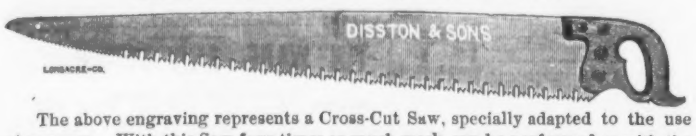


Improved Iron Frame Try Square, warranted perfect and true in every particular.



Mitre Box Saw.

ONE MAN CROSS-CUT. Length of Saw Four feet.



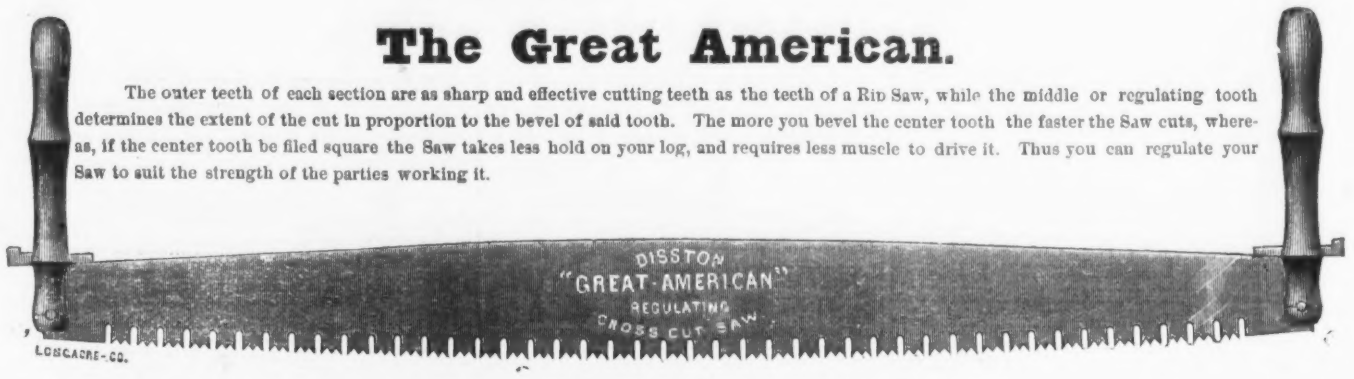
The above engraving represents a Cross-Cut Saw, specially adapted to the use of one man. With this Saw four times as much work can be performed as with the ordinary Saw.

The Most Perfect Saw File ever offered to the Public.
"THE LITTLE WONDER."
Corrugated Saw File. Patented Sept. 2d and 16th, 1873.

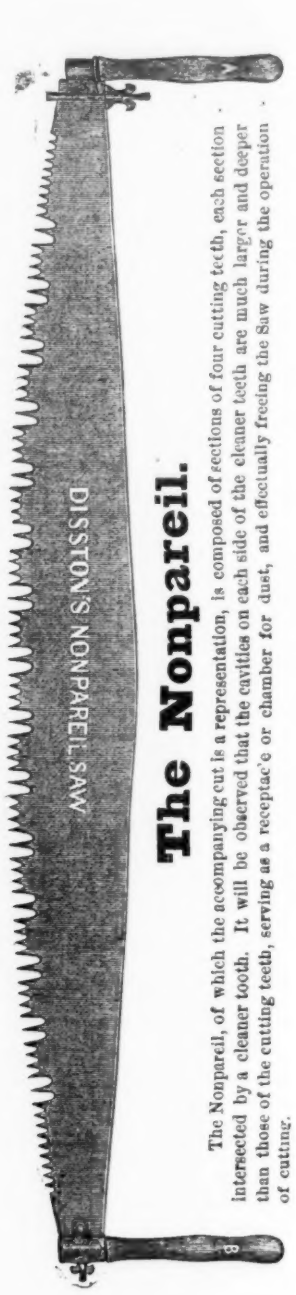
The gum tip for proteeting the thumb and forefinger of the operator from abrasion, is much superior to the old style thumb stall or pad, and the peculiar shape of the handle gives the operator greater command over the file in its various manipulations.

Compass Saw, Keystone Tooth, it cuts with or across the grain with equal facility.

The Great American.

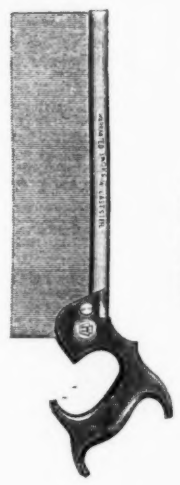


The outer teeth of each section are as sharp and effective cutting teeth as the teeth of a Rip Saw, while the middle or regulating tooth determines the extent of the cut in proportion to the bevel of said tooth. The more you bevel the center tooth the faster the Saw cuts, whereas, if the center tooth be filed square the Saw takes less hold on your log, and requires less muscle to drive it. Thus you can regulate your Saw to suit the strength of the parties working it.



The Nonpareil.

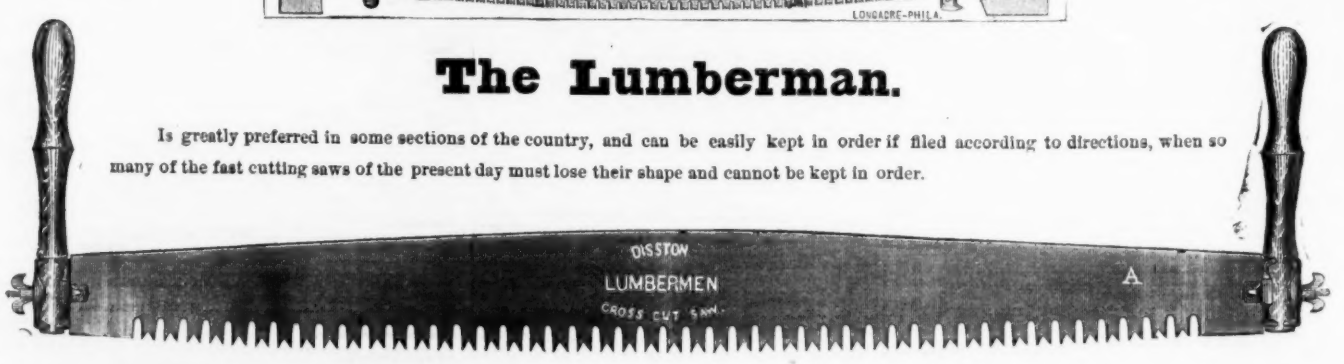
The Nonpareil, of which the accompanying cut is a representation, is composed of sections of four cutting teeth, each section intersected by a cleaner tooth. It will be observed that the cavities on each side of the cleaner teeth are much larger and deeper than those of the cutting teeth, serving as a receptac'e or chamber for dust, and effectually freeing the Saw during the operation of cutting.

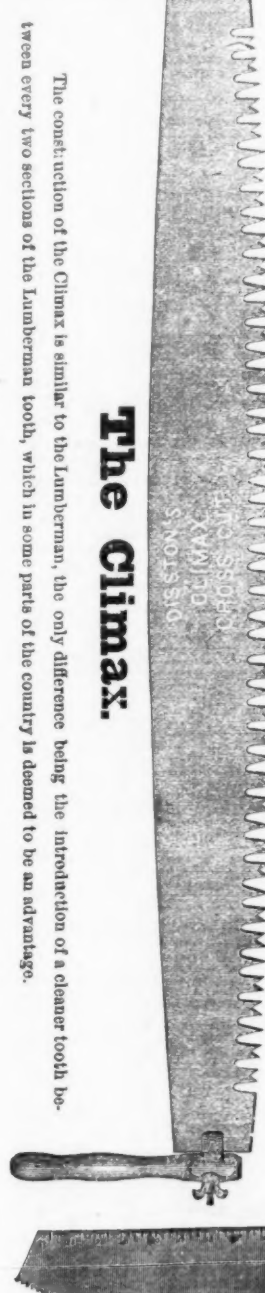


Dove Tail Saw.

The Lumberman.

Is greatly preferred in some sections of the country, and can be easily kept in order if filed according to directions, when so many of the fast cutting saws of the present day must lose their shape and cannot be kept in order.

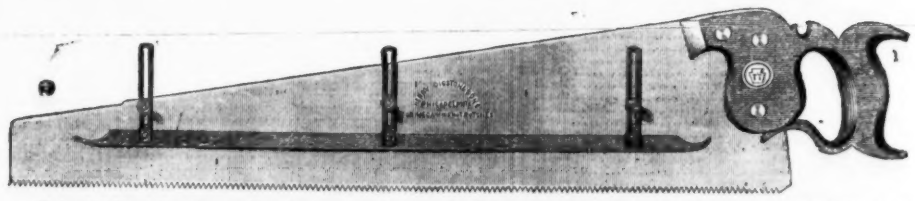




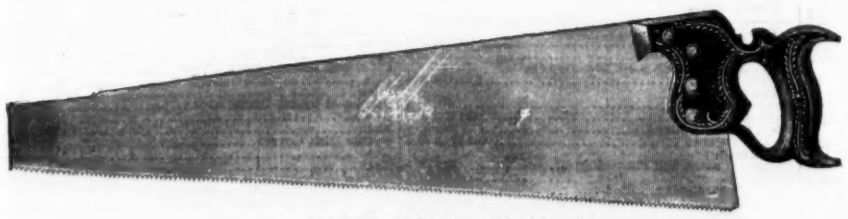
The Climax.

The construction of the Climax is similar to the Lumberman, the only difference being the introduction of a cleaner tooth between every two sections of the Lumberman tooth, which in some parts of the country is deemed to be an advantage.

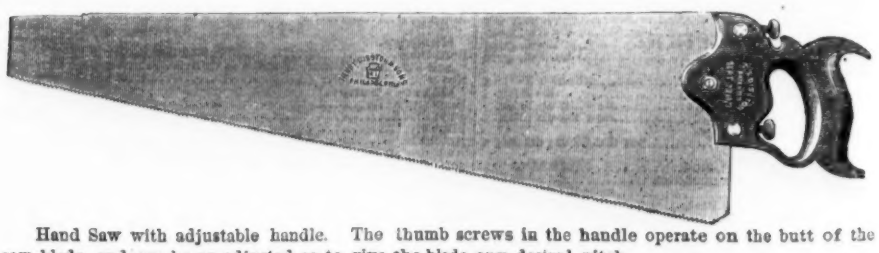
A cheap Saw, fully guaranteed. Six tools in one. Adapted to farmers' or plantation use. A Rip and Cross-Cut Saw, Square, Rule, Straight Edge and Scratch Awl combined.



Patent Adjustable Gauge Saw for sawing tenons, kerfing, or any work where the cut is required to be of definite depth. Will pay for itself in one day. Try it and be convinced. Remove the gauge and use as an ordinary saw.



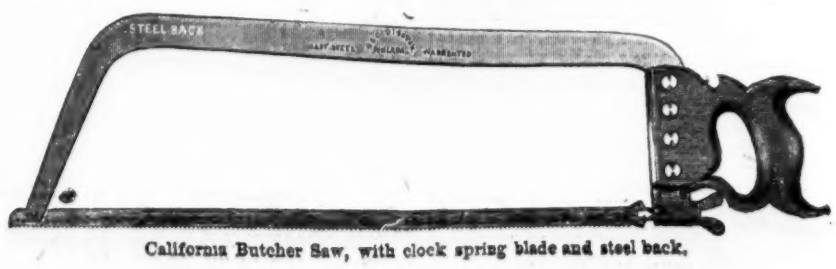
Game Cock Hand Saw—a perfect beauty.



Hand Saw with adjustable handle. The thumb screws in the handle operate on the butt of the saw blade, and can be so adjusted as to give the blade any desired pitch.

No. 1 Butcher Saw.

Hack Saw. The blade in this saw is reversible, an advantage which will be readily appreciated by mechanics.



California Butcher Saw, with clock spring blade and steel back.

New York Wholesale Prices, April 15, 1874.

HARDWARE.

Anvils.
Solid Cast Steel ... ℘ ℔ 14c
Wright's ... ℘ ℔ gold 13c; over 250 ℔s 12½c, gold
Armitage's Mouse Hole ... gold 11c
Wilkinson's ... ℘ ℔ gold 11½c
Eagle Anvils, ℘ ℔ 11c currency ... dis 15 @ 15&5 %
Apple Parers.
Turn Table / Lightning / Conqueror } $8·50 ℘ doz
Reading ... ℘ doz 9 00
Union ... ℘ doz 9 00
Bay State, Paring, Coring and Slicing ... 15 00
Skeleton " " " ... 9 00
Climax Slicer ... 9 00 } dis 5 %
Bay State Peach Parer ... $11 00 @ 11 50
Lightning " " ... 11 00 @ 11 50
Peach Stoner and Halver ... 7 00
Augers and Bits.
Snell Mfg. Co. ... dis 15 @ 20 %
Russell Jennings ... dis 10 %
Douglass Mfg. Co., Extra ...
" " No. 1 ...
" " Hollow Augers ...
Cushman's Expanding Hollow Augers ... dis 20 %
Ives' Augers and Bits ... dis 30&10 %
" Gouge Lip Augers and Bits ... dis 30&10 %
" Hollow Augers ... dis 30&10 %
" Expansive Hollow Augers ... dis 30&10 %
" Expansive Bits ... dis 20&10 %
Andrews' Bits ... dis 25 %
Clark's Expansive Bits ... dis 15 %
Cook's Patent Augers ... dis 50 %
" " Bits ... dis 40 %
Shepardson's Double Cut Bits ... dis 20 %
Griswold's Patent ... dis 20 %
Cast Steel Cut Augers ... dis 30&10 %
" Auger Bits ... dis 30&10 %
Gimlet Bits ... dis 10&10 %
Long Augers ... new list dis 30 %
Bonney's Patent Hollow ... $48 per doz—dis 25 %
Stearns' ... $48 per doz—dis 25 %
Morse's Bit Stock Drills ... dis 20 %
Nobles Mfg. Co. C. S. Cut Augers ... dis 30&10 %
Watrous Ship Augers ... dis 10 %
Vaughan's Post Hole—
6 in. $23 60; 9 in. $25 per doz ... dis 20 %
Axes.
Blood's ... $12 50 @ 14 00
Hunt's ... ℘ doz $15 00 @ 17 50 net @ dis 5 %
Collins' ... ℘ doz 11 00 @ 15 50 net @ dis 5 %
Hurd's ... ℘ doz 12 50 @ 13 50
Schweitzer Mfg. Co.'s ... ℘ doz 13 00 @ 15 00
Simmons' ... ℘ doz 12 50 @ 14 00
Morris' ... ℘ doz 12 50 @ 13 50
Red Jacket ... ℘ doz 12 00 @ 12 50
Mann's ... ℘ doz 12 50 @ 13 00
" Double Bitted ... ℘ doz 21 50 @ 22 00
Fowell Tool Co., "Peerless" ... ℘ doz 13 00 @ 14 50
Underhill's ... ℘ doz 12 50 @ 13 50
" Crown ... ℘ doz 13 00 @ 14 00
John Leverett's ... ℘ doz 12 50 @ 15 50
Nobles Mfg. Co. S. B. ... ℘ doz 12 50 @ 13 00
" D. B. ... ℘ doz 22 00 @ 23 00
Balances.
Chatillon's / Frary's / Morton's } new list dis 15 %
Bands.
Plated ... new list dis 50&5 %
Iron Rim ... new list dis 15&5 %
Brass (Plated list) ... new list dis 50, 10&5 %
Oroide ... new list dis 50&5 %
Bells.
Hand, Light Brass ... dis 60&10 @ 65&10 %
White Metal ... dis 50&10 %
Globe ... dis 15&10 %
Abbe's ... dis 10&10 %
Taylor's Patent Door ... net
Western Gong ... net
Brook's Crank ... dis 10 %
" Pull ... dis 15&10 %
Hart Mfg. Co., Crank and Pull ... dis 50&10 %
Cow—Common Wrought ... dis 20&10 %
Western ... new list dis 20&10 %
Kentucky "Star" ... new list dis 20&10 %
Dodge's Genuine Kentucky ... new list dis 25 %
Yaw's Genuine ... dis 20 %
Texas ... dis 20&10 %
Call ... dis 15 %
Bellows.
Blacksmiths' ... dis 15 %
Moulders' ... dis 15 %
Hand Bellows ... dis 10 %
Blind Fasteners.
Van Sand's ... ℘ gross $14 00
Washburn's Patent ... ℘ gross 14 00
Merriman's ...
Blind Staples.
Boardman's Patent, ½ in. and larger ... ℘ ℔ 37 c
" ⅜ in ... " 42 c
Bolts.
Carriage and Tire, Ætna Nut Co. ... dis 60 %
Stove, Ætna Nut Co. ... dis 10&5 %
Cast Iron Barrel, Shutter, &c. ... new list dis 60&10 %
Wrought Iron Barrel ... new list dis 50&10 %
" " Square ... new list dis 50&10 %
Wrought Iron Flush ... dis 15 %
Carriage and Tire, Common ... dis 70&10&5 %
" " " Norway Iron ... 50&10 %
Star, Philadelphia ... dis 50 @ 50&10 %
Eagle, Philadelphia ... dis 50 @ 50&10 %
Philadelphia Pattern, P. S. & W. ... dis 50&10 %
Tire, Bessemer Steel, Hubbard & Curtiss ... dis 50 %
Carriage and Tire, R. B. & W. ... old list dis 50&5 %
Plow, R. B. & W. ... dis 30 %
Stove, R. B. & W. ... dis 10 %
" Shelton Co, Shaved Heads ... dis 15 %
Union Nut Co., old list ... dis 50&20 %
" " Stove ... dis 15 %
Machine ... dis 30&10 @ 40 %
Borax.—In cases of 100 lbs ... ℘ ℔ 18c
Boring Machines.
Kellogg's ... dis 15 %
Snell Mfg. Co., Rice's Patent ... dis 15 %
" " Regular ... dis 15 %
Douglas Mfg. Co. ... dis 20 %
Morticing Machines each ... $18 00
Bow Pins ... dis 50 %
Braces.
Barber's Patent ... dis 40&5 %
Wilson Mfg. Co. ... new list dis 10 %
Spofford's Patent ... dis 40&5 %
Noble's Patent ... dis 40&5 %
Bartholomew's American Ball ... dis 10&10 %
" Patent Grip ... dis 40 %
Ives' Novelty ... dis 40&5 %
Bull Rings ... dis 50 %
Bung Hole Borers.
Common and Ring ... dis 25 %
Enterprise Mfg. Co. ... dis 20&10 %
Ives' Tap Borers ... dis 25 %
Butchers' Cleavers.
Bradley's ... dis 25 %
Beatty's ... new list dis 10 %
2 3 4 5 6 7 8 9
$19·00 $21·50 $24·00 $27·00 $30·00 $33·50 $36·50 $40·00
Hart Mfg. Co. ... dis 45&10 %
0 1 2 3 4 5 6
$25·25 $29·75 $30·25 $38·75 $43·55 $48·50 $54·00
Butts.
Wrought Brass ... new list dis 30 %
Cast Fast Joint, Narrow ... dis 50 %
" " Broad ... dis 50 %
Cast Loose Joint ... dis 60 %
" " Mayer ... dis 50 %
" " Parliament ... dis 50 %
Loose Pin ... dis 40&10 %
Wrought Fast Joint, Narrow ... dis 30 %
Wrought Broad ... dis 35 %
" Loose Joint ... dis 35 %
Wrought Table and Back Flaps ... dis 30 %
Palmer Blind Butts ... dis 30&10 %
Nicholson Blind Butts ... dis 40&10 %
Parker's Blind Butts ... dis 45&10 %
Huffer's Blind Butts ... dis 30&10 %
A. S. Parker's ... dis 40&10 %
Clark's Surface Blind Hinges, Nos. 1, 3 and 5 ... dis 50 %
" " " " No. 20 ... dis 55&10 %
" Mortise " " ... dis 30&5 %
Seymour's ... dis 40&10 %
Shepard's ... dis 50 %
Garretson's ... No. 1, dis 50&10 %; Nos. 2 and 7, dis 50 %
The American Spiral Spring Butt Co. ... dis 20 %
Standard ... dis 40&10 %
Caps—Percussion, per 1000.
G. D. ... 40c
Ely's E. B. ... 1-4s, 58c.; 1-10s, 65c., gold
" Double Waterproof, 1-4s, $1·45; 1-10s, $1·52½c., gold
Colt's ... 1-10s, 70c., gold
Cartridges.
Metallic ... dis 50 @ 50&10 %
Cards.—Horse and Curry ... dis 25&10 %
Cotton ... new list dis 10&10 %
Wool ... new list dis 10&10 %
Carpet Stretchers.
P. S. & W. ... per doz $2 00; dis 33⅓ %
Casters.
Iron and Wood Wheel, Bed ... dis 33⅓&10 %
Brass and Porcelain Wheel, Bed ... dis 33⅓&10 %
Deep Socket, Bed ... new list dis 20&10 %
Iron and Wood Wheel Plate ... new list dis 33⅓&10 %
Brass Wheel Plate ... new list dis 33⅓&10 %
Porcelain Wheel Plate ... new list dis 33⅓&10 %
Cattle Leaders ... dis 50&10 %
Chain.
English Coil, by the cask ... net gold
℘ ℔ ... 13 9¾ 9 8½ 8¼ 8c
3-16 ¼ 5-16 ⅜ 7-16 ½
Trace, 6½-10-2 ... by the cask, ℘ pair, gold, 60c
Trace, 7-10-2 ... by the cask, ℘ pair, gold, 65c
Galvanized Pump Chain ... ℘ ℔ 13c
German Halter Chain ... new list, Jan. 1, dis 10 %
German Coil ... new list, Jan. 1, dis 10 %
Jack Chain, Iron ... dis 50 %
" Brass ... dis 40 %
Chalk.
White ... ℘ gross, 50c
Red ... ℘ gross, 75c
Blue ... ℘ gross, 90c
Crayons ... ℘ gross, 14c
Cherry Stoners.
"Family" ... ℘ doz $9·00
Chisels.
Socket Firmers ... dis 60 @ 60&10 %
Socket Framing ... dis 60 @ 60&10 %
Socket Corner ... dis 60 %
Tanged Firmers ... dis 40 to 40&10 %
Butcher's ... $5·50 to £ gold—new list
Newbould's ... $5·50 to £ gold
Spear & Jackson's ... $5·50 to £ gold—new list

Clips, Axle.
Norway or Best ... dis 30 %
Superior ... dis 50 %
"Star," Superior Philadelphia ... dis 45&5 %
Coal Shovels.
Iron Handled ... ℘ doz, $ 85 @ 1 25
Wooden Handled ... ℘ doz, 1 00 @ 2 00
Coal Hods.—Smith, Burns & Co. ... dis 35 %
No. 14 15 16 17 18
Japanned ... $9·00 9·75 10·50 12·00 13·50 per doz
Galvanized ... 13·00 14·50 15·50 17·50 19·50 "
Morning Glory ... dis 30 %
No. 15 16 17
Japanned ... $12·50 13·50 15·50 per doz
Galvanized ... 18·00 19·50 21·00 "
Cockeyes ... dis 30 %
Cocks.
Brass Racking ... dis 25&10 %
Lock and Globe ... dis 25&10 %
Coffee Mills.
Board and Box ... dis 15 %
Increase Wilson's ... new list dis 15 %
Selsor's Pat ... $9·50, $10·50—dis 20 %
French Steel ... dis 15 %
The Swift ... dis 25 %
"American" ... dis 20 %
Enterprise Mfg. Co. ... dis 20&10 %
Compasses and Dividers.
Bemis ... dis 35 %
Excelsior ... dis 30 %
Peck Stow & Wilcox ... dis 25 %
Coopers' Tools.
Bradley's ... dis 15 @ 20 %
Chas. E. Little ... dis 15 @ 20 %
Swan & Brombacher ... dis 15 @ 20 %
Corn Knives and Cutters.
Bradley's ... dis 10 %
Crow Bars.
Cast Steel ... ℘ ℔ 11c.net
Iron, steel points ... ℘ ℔ 7c
Crucibles.
Gautier & Co. ... ℘ No. 5½c
Curry Combs.
Hotchkiss' and Kellogg's, Iron and Brass ... dis 15 %
Fitch's ... dis 15&10 %
Rubber ... ℘ doz, $9·00—dis 15 %
Schweitzer Mfg. Co. ... dis 20 %
Curtain Pins.
Silvered Glass ... old list dis 45&10 %
Cutlery.
American Table ... net list
American Pocket ... dis 25 %
Dog Collars.
Embossed Gilt ... dis 10 %
Leather ... dis 20 %
Door Springs.
Gray's ... $7·50 per doz—dis 40&10 %
Torrey's Patent ... $7·50 ℘ doz—dis 40&10 %
Palmer's Japanned No. 6 ... ℘ doz $5·00
" Coppered " ... " 6·00
" Silvered " ... " 8·00
Challenge.—
Japanned ... ℘ doz $4 00 @ 6 00
Bronzed ... ℘ doz 5 00 @ 7 00
Nickel Plated ... ℘ doz 6 50 @ 9 00
1 Gross lots ... dis 10 %
5 Gross lots ... dis 20 %
Drawing Knives ... dis 60 @ 60&10 %
Bradley's ... dis 25 %
Adjustable Handled ... dis 10 %
Drills.
Ingersoll's Ratchet ... dis 25 %
Moore's Triple Acting Ratchet ... dis 20 %
Whitney's Ratchet ... dis 20 %
Blacksmiths' ... each $3 25 net
Drug Mills.
American Drug Mills ... dis 20 %
Egg Beaters.
Monroe's ... ℘ doz net $8·25 @ 8·50
Dover ... ℘ doz net $6·00
National ... ℘ doz $4·50—dis 10 %
Peerless ... ℘ doz net $4·00
Emery.
Genuine Chester—Regular Nos ... ℘ ℔ 7c } dis 5 @ 10 %
" Flour and FF ... ℘ ℔ 4c }
Washington Mills—Regular Nos ... ℘ ℔ 8c
" Flour ... ℘ ℔ 5c
Enameled and Tinned Ware.
Kettles ... dis 20 @ 25 %
Sauce Pans, Glue Pots, &c ... dis 15 %
Escutcheons.
Brass Thread ... dis 60&10 %
Faucets.
Cork Lined, Wood ... dis 60 %
Fenn's ... dis 50 %
" Cork Stops ... dis 40 %
Star ... dis 55&10 %
Frary's Patent Petroleum ... dis 10&10 %
Taylor's Pattern " ... dis 20&10 %
Wood and Metallic ... dis 40 %
Felloe Plates ... ℘ ℔ 14c; dis 10 %
Files.
Nicholson ... $5 00 to £ currency—dis 10 %
Newbould's ... 5 25 to £ gold
J. & Riley Carr's ... 5 50 to £ gold
" " Rasps ... 5 75 to £ gold
Stubs' ... 8 50 @ 9 00 to £ gold
Butcher's ... 5 50 to £ gold
Walter Spencer & Co.'s "Diamond" ... 5 25 to £ gold
Spear & Jackson's ... 5 50 to £ gold
Hargreaves, Smith & Co.'s ... 5 00 to £ gold
Jowitt's ... 5 25 to £ gold
"Western" ... 5 00 to £ net
W. K. & C. Peace's "Imperial" ... 5 25 to £ gold
R. Ibbotson ... 5 00 to £ gold
Beam & Murray, "Cyclops" ... 4 85 to £ gold
Fisher's ... 4 75 to £ gold
Goodlad's ... 4 00 to £ gold
Moss & Gamble ... 5 25 @ 5 50 to £ gold
Thos. Turner & Co. (Peter A. Frasse & Co.) 5 00 to £ gold
" " Horse Rasps ... 5 50 to £ gold
Fluting Machines.
Acme ... $7 00 each net
Manville, No. 2 ... 7 00 each net
Knox, with 4-inch Rolls ... 5 00 each net
" " 6 " ... 6 00 each net
O. K. ... 6 50 each net
Peerless, 4-inch Rolls ... 4 00 each net
" 5 " ... 5 00 each net
Excelsior, No. 1 ... 4 75 each net
" No. 2 ... 6 50 each net
Diamond ... 7 50 each net
Climax 7-inch Rolls ... 8 00 each net
" 4½ " ... 6 50 each net
Empire ... 4 00 each net
Eureka, No. 1, 7-inch Roll ... 8 00 each net
" No. 2, 5-inch Roll ... 6 00 each net
K. F. M., 4½-inch Roll ... 5 50 each net
" 6-inch Roll ... 6 00 each net
Myers' Fashion Fluter, 4½-inch Rolls ... 3 00 each net
" Convex Brass Fluter, Sad Iron attachment ... $1·75
Domestic Fluter ... $1·75 each net
Fairy, Self-Heater ... 8 00 each net
Geneva Hand Fluter ... $15 00 per doz net
Champion, 6 inch rolls ... $6 00 each net
" 4 inch rolls ... $5 00 each net
Forks.
Hay, Manure & Spading ... dis 25 %
Plated A 1 ... dis 30&5 %
Fry Pans.—P. S. & W.
Tinned ... dis 25 %
℘ doz ... $3·00 3·25 3·62 4·00 4·50 5·00 5·50 6·00 7·50
No. ... 0 1 2 3 4 5 6 7 8
Smith, Burns & Co., "Excelsior" Polished ... dis 35 %
℘ doz ... $3·70 4·00 4·70 5·30 6·00 7·00 8·00 9·00
No. ... 1 2 3 5 6 7 8
Gauges.
Marking ... dis 45&10 %
Wire ... dis 10 %
Hammers.
Emmet Hammer Co. ... dis 10 %
Maydole's ... dis 5 %
Cheney's ... new list net
Verree ... dis 5 %
Yerks & Plumb ... new advanced list dis 5 @ 10 %
Minot & Co. ... dis 15 %
Magnetic Tack ... dis 20&10 %
Handles.
Hammer and Hatchet ... dis 10 %
Quakertown, Axe, Pick and Sledge ... dis 10 %
" Hammer and Hatchet ... net
Greensboro', Axe, Pick, Hammer, &c ... dis 10 %
Woolworth Axe, Pick and Sledge ... dis 10 %
Brad Awl ... per gross $3 50—dis 20&10 %
Hickory Firmer Chisel, ass'td " 5 25—dis 10&10 %
" " " large " 6 25—dis 10&10 %
Apple " " ass'td " 6 00—dis 10&10 %
" " " large " 7 00—dis 10&10 %
Socket " " ass'td " 3 50—dis 10&10 %
" Framing " " " 6 00—dis 10&10 %
File ... " " 3 50—dis 10&10 %
Auger ... " " 5 50—dis 10&10 %
" large " 6 50—dis 10&10 %
Hangers.
Barn Door ... revised list dis 60&10 %
"Anti-Friction" (Rider, Wooster & Co.) ... dis 30 %
Novelty ... dis 30 %
Harness Snaps.
Henshaw's ... dis 25&10 %
Judd's ... dis 40 %
Fitch's ... dis 30 %
Hotchkiss' ... dis 10 %
Andrews' ... dis 25 %
Sargent's ... new list dis 50&10 %
Hatchets.
Isaiah Blood ... dis 10 %
Shingling, Nos. 1 2 3 ... ℘ doz $7 50 8 00 8 50
Claw, " 1 2 3 ... ℘ doz 8 50 9 00 9 50
Lathing, " 1 2 3 ... ℘ doz 7 50 8 00 8 50
Hunt's ... dis 10 %
Shingling, Nos. 1 2 3 ... ℘ doz $7 25 8 00 8 75
Claw, " 1 2 3 ... ℘ doz 7 75 8 50 9 25
Lathing, " 1 2 3 ... ℘ doz 7 50 8 25 9 00
Hurd's ... dis 20 %
Shingling, Nos. 1 2 3 ... ℘ doz $8 00 8 50 9 00
Claw, " 1 2 3 ... ℘ doz 9 00 9 50 10 00
Lathing, " 1 2 3 ... ℘ doz 8 00 8 50 9 00
Newark's Edge Tool Co.'s ... dis 25 %
Shingling, Nos. 1 2 3 ... ℘ doz $6 50 7 00 7 50
Claw, " 1 2 3 ... ℘ doz 7 25 7 75 8 25
Lathing, " 1 2 3 ... ℘ doz 6 50 7 00 7 50
Yerks & Plumb ... dis 10 %
Shingling, Nos. 1 2 3 ... ℘ doz $7 00 7 50 8 00
Claw, " 1 2 3 ... ℘ doz 7 50 8 00 8 50
Lathing, " 1 2 3 ... ℘ doz 7 00 7 50 8 00
Simmon's ... dis 15 %
Shingling, Nos. 0 1 2 3 ... ℘ doz $7 50 8 00 8 50 9 00
Claw, " 1 2 3 ... ℘ doz 9 00 9 50 10 00
Lathing, " 1 2 3 ... ℘ doz 8 00 8 50 9 00
Broad, " 1 2 3 ... ℘ doz 9 00 10 00 12 00
" " 4 5 6 ... ℘ doz 14 00 16 00 18 00
" " 7 8 ... ℘ doz 20 00 22 00
Elephant ... dis 25 %
Shingling, Nos. 1 2 3 ... ℘ doz $8 00 8 50 9 00
Claw, " 1 2 3 ... ℘ doz 9 00 9 50 10 00
Lathing, " 1 2 3 ... ℘ doz 8 00 8 50 9 00

J. P. Verree & Co. ... dis 5 %
Shingling, Nos. 1 2 3 ... ℘ doz $7 00 7 50 8 00
Claw, " 1 2 3 ... ℘ doz 7 50 8 00 8 50
Lathing, " 1 2 3 ... ℘ doz 7 00 7 50 8 00
Underhill's ... dis 10 %
Shingling, Nos. 1 2 3 ... ℘ doz 7 25 8 00 8 75
Claw, " 1 2 3 ... ℘ doz 7 75 8 50 9 25
Lathing, " 1 2 ... ℘ doz 11 00 12 00
Hinges.
Wrought Strap and T ... dis 25&7½ %
Providence Plate. {6 and 8 in. list 11c. / over 8 in. list 9½c.} ... dis 20 %
Screw Hook and Strap ... {8, 10, 12 in. 8c / 14 to 36 in. 6½c} ... net
Heavy Welded Hook ... {8 to 12 in., 9c / 14 in & up, 8½c} dis 10 %
Screw Hook and Eye ... {¾ to 1 in., 9½c / ⅝ in. 10½c / ½ in. 12½c} ... net
Hoes.
Solid Shank, C. S. ... ℘ doz $8 00—dis 20 @ 30 %
Socket ... ℘ doz 9 00—dis 20 @ 30 %
Riveted Eye ... ℘ doz 5 00—dis 20 @ 30 %
Grub ... dis 20 %
Planters'—Winsted ... add 10 %
Scovill ... add 33⅓ %
Scovill Pattern (Winsted) ... add 20 %
Hooks.
Belt ... dis 50 %
Clothes Line ... dis 60&10 %
Bench—Skinner's ... per doz $3 00, dis 30 %
Bench—Hotchkiss' $5 00 ℘ doz ... dis 10 %
Bench—Weston's No. 1, $8·50; No. 2, $7·00 per doz net
" —McGill's ... $3 00 per doz, dis 10 %
Wardrobe, Japanned ... new list dis 60&10 %
Hat and Coat " ... new list dis 60&10 %
Wrought Staples and Hooks and Staples ... dis 60, 10&10 %
Screw Hooks and Eyes, revised list ... dis 70 %
Grass ... dis 25 %
Whiffletree—Patent ... dis 30 %
Hooks and Eyes—Malleable Iron ... dis 50 %
" " Brass ... dis 50&10 %
Horse Nails.
Putnam's.
No. 5 6 7 8 9 10
32c 28c 26c 25c 24c 23c
In lots 2000 lbs. dis. 5 %.
Ausable
No. 5 6 7 8 9 10
30c 27c 25c 24c 23c 22c
Pointed & finished ... 31c 28c 26c 25c 24c 23c
Clinton ... 22c 19c 17c 16c 15c 14c
In lots of 1000 lbs. 5 % discount.
Brundage.
No. 5 6 7 8 9 10
29c 26c 24c 23c 22c 21c
In lots of 500 lbs., dis. 5 %.
American Pressed.
No. 5 6 7 8 9 10
32c 30c 30c 30c 30c 30c
In lots of 1000 lbs. dis 5 %.
Perkins Finished (ready to drive).
No. 5 6 7 8 9 10
31c 28c 26c 25c 24c 23c
In lots of 1000 lbs. dis 5 %.
Buffalo Forged.
No. 6 7 8 9 10
28c 26c 25c 24c 23c
Globe (Pointed and Polished).
No. 5 6 7 8 9 10
31c 28c 26c 25c 24c 23c
In lots of 1000 lbs., 5 % discount.
National (Pointed and Polished).
No. 5 6 7 8 9 10
Patent Finish ... 28 25 23 22 21 20
Extra " ... 30 27 25 24 23 22
In lots of 1000 lbs., dis 5 %.
Vulcan (Blued, pointed, ready to drive).
No. 5 6 7 8 9 10
33c 30c 28c 27c 26c 25c
In lots of 500 lbs., 5 % discount.
" 1000 lbs 7½ % discount.
New London Horse Nails.
No. 6 7 8 9 10
Great Western ... 27c 25c 24c 23c 22c
U B ... 29c 27c 26c 25c 24c
In lots of 1000 lbs., dis 5 %.
Star Brand ... ℘ ℔ 16c
Morgan ... 14c
Horse Shoes.
Burden ... ℘ keg, $5 87½
R. I. Horse Shoe Co., Perkins Pattern ... ℘ keg, 5 87½
" " R. I. Pattern ... ℘ keg, 6 37½
Mule Shoes ... ℘ keg, 6 87½
Kettles.
Brass ... ℘ ℔ 55c net
In lots of 500 ℔s ... ℘ ℔ 50c net
Knives.
Ames' Butcher Knives ... dis 20 %
" Shoe " ... dis 15 %
Hay and Straw, "Wadsworth's" ... dis 20 %
Knobs.
Base—Common ... net
" Plush Tip ... dis 10 %
" Elastic End ... reduced list dis 10&10 %
Ladles.
Melting ... dis 20 %
Lanterns.
Brady's Patent ... dis 10 %
Ætna ... dis 10 %
Yankee ... dis 10 %
De Beque ... dis 10 %
Locks and Latches.
Cabinet—Eagle ... dis 35 %
Cabinet—Gaylord ... dis 25 %
Trunk ... dis 10 %
Continental ... dis 15 %
Shepardson's ... dis 20 %
American Lock Co. ... dis 33⅓ %
Plate ... dis 25 %
Pad ... new list dis 50, and 2 % for cash
Barnes & Deitz ... dis 25 %
Yale Lock Co. ... dis 40 %
Sargent & Greenleaf ... dis 20 %
Trenton Lock Co. / Branford / Norwich / Russell & Erwin / Norwalk / Nashua / Mallory, Wheeler & Co. / P. & F. Corbin / Parker & Whipple / Jacobus & Nimick Mfg. Co. } New list dis 45 %. 2 % extra for cash.
Mallets.
Hickory and Lignumvitæ ... dis 10&10 %
Meat Cutters.
Dixon's (P. S. & W.) ... dis 10 %
No. 1 2 3 4
℘ doz ... $14 00 $17 00 $19 00 $30 00
Hales' ... dis 25 %
No. 11 12 13
℘ doz ... $27 00 $33 00 $42 00
Miles Challenge ... dis 20 %
No. 1 2 3
℘ doz ... $22·00 $30·00 $40·00
Perry's Champion (P. S. & W.) ... dis 10 %
No. 200 300 400
℘ doz ... $22 00 $27 00 $40 00
Woodruff's (P. S. & W.) ... dis 10 %
No. 100 150
℘ doz ... $15 00 $18 00
American ... dis 25 @ 25&5 %
No. 1 2 2½ 3 4 5
Each ... $6 00 $9 00 $14 00 $15 00 $30 00 $75 00
Molasses Gates.
Stebbins' Pattern ... dis 60&10 %
Tinned ends ... dis 40&10 %
Patent Self-Measuring ... per doz $42 00—dis 20&10 %
Bush's ... dis 20 %
Lincoln's ... dis 50&10 %
Mortars and Pestles.
Iron ... net
Mouse Traps.
Wood Choker ... ℘ doz holes, 16 @ 18c
Round, Wire ... ℘ doz $1 50 to 2 00 net
Square, " ... ℘ doz 2 00 to 2 50 net
Cage, " ... ℘ doz 2 50, dis 10 %
Nails.—See Trade Report.
Nuts and Washers.
Nuts ... large, 5½c; small, 7½c off list.
Washers ... large, 7c; small, 9c off list.
Oil Stones.
Washita No. 1 ... ℘ ℔ 22c
" Slips ... ℘ ℔ 44c
Washita No. 2 ... ℘ ℔ 17c
Hindostan ... ℘ ℔ 6c dis 10&10 %
" Slips ... ℘ ℔ 10c dis 10&10 %
Oilers.
Olmsted's ... new list dis 25&10 %
Broughton's ... dis 25&5 %
Malleable ... per doz $5 00 dis 10 %
Common Tin ... dis 30 %
" Zinc ... dis 30 %
" Brass and Copper ... dis 30 %
Picks.
Washoe R. R. ... dis 25 % ... Nos. 1 3 4 5
℘ doz ... $14·00 15·00 16·00 17·00 18·00
Washoe Coal, dis 20 % ... $8·50 9·00 10·00 11·00 13·00 15·00
Extra 10 % dis 25 doz in 6 months, ending Jan. and July.
Picture Nails and Knobs.
Richards' Patent ... dis 40 @ 40&10 %
Pinking Irons ... per doz $3 00—dis 60&10 %
Planes.
Chapin's, 1st quality ... dis 30 %
Sandusky Tool Co., 1st quality ... dis 30 %
" " 2d " (Ogontz) ... dis 40 %
Ohio Tool Co., 1st quality ... dis 30 %
" " 2d quality (Sciota) ... dis 40 %
Owasco Tool Co., 1st quality ... dis 30 %
" " 2d quality ... dis 40 %
Howland's. 1st quality ... dis 30 %
Bailey's Patent Adjustable ... dis 20&10 %
Plane Irons, Butcher's ... $5 50 to £ gold—new list
" Chapin's ... dis 10&10 %
" Ohio Tool Co. ... dis 10 %
" Spear & Jackson's ... 5 50 to £ gold—new list
" Sandusky Tool Co. ... dis 10 %
Plumbs and Levels.
Chapin's ... dis 60&10 %
Standard Rule Co.'s New Adjustable ... dis 50&10 %
Stanley Rule and Level Co. ... dis 60&10 %
Pumps.
Douglas Cistern, etc ... new list dis 25 %
" S. & F. ... new list dis 20 %
Rakes.
Cast Steel ... dis 30 %
$8 00 9 00 10 00 11 00
8 10 12 14 teeth.
Malleable ... dis 30 %
$5 50 6 00 6 50
11 13 15 teeth.

Razor Straps.
Genuine Emerson ... dis 25 %
" " in 5 gross lots ... dis 30 %
Hunt's ... dis 35 %
Chapman ... dis 10 @ 15 %
Rivets.
Iron and Tinned ... dis 25 %
Copper Rivets and Burrs ... new list dis 10 %
Rods.
Stair ... new list dis 30 %
American Patent ... dis 30 %
Rollers.
Barn Door ... revised list dis 60&10 %
Rope. Manufacturers' List
Manila ... ½ inch and larger ℘ ℔ 17 c
" ... ⅜ inch ℘ ℔ 17½c
" ... ¼ and 5-16 inch ℘ ℔ 18 c
" Lath Yarn, Fine Tar'd ... ℘ ℔ 18 c
" Hay Rope ... ℘ ℔ 17½c
Sisal ... ½ inch and larger ℘ ℔ 15½c
" ... ⅜ inch ℘ ℔ 16 c
" ... ¼ and 5-16 inch ℘ ℔ 16½c
" Hay Rope ... ℘ ℔ 16 c
Rules.
Chapin's Boxwood ... dis 60&10 %
" Ivory ... dis 50&10 %
Hubbard & Curtiss Mfg. Co. ... new list net
Stanley Rule and Level Co.'s Ivory ... dis 50&10 %
" " " Boxwood ... dis 60&10 %
Standard Rule Co.'s Boxwood ... dis 60&10 %
" " " Ivory ... dis 50&10 %
Sad Irons.
... ℘ ℔ 4½c net
Sad Iron, Nickel Stand attached ... ℘ ℔ 9c
Sand Paper—dis 7½ @ 10 %
Beader & Adamson's (Flint) 00 to 1½ ... $4 25 ℘ ream
" " " 2, 2½ & 3 ... 4 75 "
Assorted ... 4 25 "
Star ... ℘ ream $3 25
Emery ... ℘ ream $6 50 @ 11 50
Cowdin Mfg. Co. ... dis 7½ @ 10 %
Diamond Flint, 00 to 1½ ... per ream $4 25
" " 2, 2½, 3 and assorted ... 4 75
" Emery Paper ... per ream $6 50 to $11 50
Sash Locks.
Clark's ... dis 20 %
Ferguson's ... dis 20 @ 25 %
Norwich ... dis 15 %
Sash Weights.
Solid Eyes ... ℘ ℔ 2½c
Sausage Fillers.
Perry's (P. S. & W.) ... dis 10 %
No. ... 1 0
℘ doz ... $15 00 $21 00
Saw Rods ... dis 10 %
Saws.
Spear & Jackson's ... $4 50 to £ gold
John Spear ... $3 60 to £ gold
Am. Saw Co. ... new list
Perforated Cross Cuts, all kinds ... 68c ℘ foot
Inserted Tooth ... dis 10 %
All else ... dis 12½ %
Disston's Circular ... dis 30 %
" Mill ... dis 25 %
" Cross Cut ... dis 15 %
" other kinds ... dis 12½ %
Livingston's Framed Wood ... dis 5 %
H. W. Peace's Circulars ... dis 10 %
Other kinds ... dis 10 %
Wm. McNiece's Hand, Cross Cut and Circular ... new list dis 10 %
E. M. Boynton's Lightning, dis 30&5 % for immediate cash
" Others ... dis 15 %
Saw Sets.
Nash's ... dis 20 %
Bemis' ... dis 10 %
Aiken's Genuine ... dis 25 %
Hotchkiss' ... dis 10 %
Common Lever ... per doz $1 80 net
Scales.
Turnbull's ... dis 15 %
Brown's ... dis 25&5 %
Fairbanks' ... new list dis 15 @ 20 %
Howe's ... dis 15&5 %
Shattuck's Counter and Union ... dis 15 %
Chatillon's Grocers' ... dis 25 %
Eureka ... dis 25 %
Scale Beams ... dis 25 %
No. 1 800 to 1200 lbs ... 90c ℘ cwt
No. 2 " " ... 75c ℘ cwt
Screws.
American list of Jan. 1, 1874.
Flat Head Iron ... dis 52½ %
Round Head Iron ... dis 50 %
Flat Head Brass ... dis 52½ %
Round Head Brass ... dis 50 %
Round Head Silver Capped ... dis 25&10 %
Hand Rail ... dis 33⅓ %
Coach or Lag ... dis 30&10 %
Coach, Patent Gimlet Point ... dis 5 %
Bed ... list net
English—Nettlefold & Chamberlain's Flat Head Iron ... dis 52½&10 %
Machine—Flat Head, Iron ... dis 60 %
" " Brass ... dis 10 %
Round Head, Iron ... dis 55 %
" " Brass ... net
Bench—Iron, Wilson's ... dis 20 %
" —Wood ... dis 15 %
Hand ... dis 25&10 %
Jack—Bell Bottom ... dis 15 %
Scythes.
Blood's German Steel, Grass ... ℘ doz $9 00
" Cast " " ... ℘ doz 10 00
" Silver " " ... ℘ doz 11 00
" German " Grain ... ℘ doz 13 00
" Cast " " ... ℘ doz 14 00
" Red Rover ... 12 00
" Young America ... 9 50
" Silver Clipper ... 12 63
Scythe Snaths ... dis 20 %
Sieves.—Mann's Patent ... dis 15 %
Shears.
Cast Steel ... dis 60&10 %
Conn. Cutlery Co., new brand ... dis 60 %
Rowe's ... dis 50&10 %
Shovels and Spades.
Ames ... new list dis 12½ %
Rowland ... dis 20&5 %
Old Colony ... new list dis 10&5 %
N. B. Sherman ... old list dis 7½ %
Shovels and Tongs.
Iron Head ... list net
Brass Head ... dis 5 %
Polished Steel ... new list dis 15 %
Slates.
Square Frames, Round Cornered, by case ... dis 60&10 %
Less than a case ... dis 50 @ 55 %
Oval Frames, by case ... dis 40 @ 40&10 %
Less than a case ... dis 30 %
Spoons.
Iron ... new advanced list, dis 10 %
By the case ... dis 20 %
Britannia ... dis 40 @ 40&10 %
Plated A 1 ... revised list dis 30&5 %
German Silver ... revised list dis 15 %
Tinned (P. S. & W.)—
Teas ... $1·50 ℘ gross, net
Tables ... 2·75 " net
Stocks and Dies.
... dis 15 %
Stove Polish.
Gem ... ℘ gross $5 00, dis 10 %
Joseph Dixon's ... ℘ gross, 6 00
National ... ℘ gross $4 75
Gold Medal ... ℘ gross $6 00, dis 15 %
Squares.
Steel ... dis 50 %; full cases, dis 50&10 %
Iron ... dis 50 %; full cases, dis 50&10 %
Nickel Plated ... add $2 50 @ $4 00 ℘ doz net
Try Squares and T Bevels ... dis 45&10 %
Star Try Squares and Bevels ... dis 30 %
Tacks.
Full Weight American Iron ... dis 40&7½ %
Half Weight American Iron ... dis 70&7½ %
Carpet ... dis 7½ %
Brads American Half Weight ... dis 50&7½ %
Finishing Nails ... ⅜ ⅝ ¾ 1 1¼ in. and over
℘ ℔ ... 25c 20c 18c 14c 13c ... dis 7½ %
Trunk and Clout ... ⅜ ⅝ ¾ 1 1¼ in. and over
℘ ℔ ... 25c 20c 18c 14c 13c ... dis 7½ %
Copper Tacks ... ℘ ℔ 50c—dis 7½ %
Iron Shoe Nails, ℘ ℔ 4-8 and longer, 10c; 3½-8, 10½c ... dis 7½ %
Double Pointed ... new list dis 33⅓ %
Tapes, Measuring.
American Flask and Cap Co. ... dis 20 %
Eddy's ... dis 20 %
Thermometers.
Tin Case ... dis 50 %
Toe Calks.
... ℘ ℔ 13c net
Tobacco Cutters.
Champion ... dis 20&10 %
Peck, Stow & Wilcox ... dis 10 %
Tinners' Tools and Machines.
P. S. & W. ... list net
Traps.
Newhouse ... dis 20 %
Hotchkiss ... dis 20&10 %
Peck, Stow & Wilcox ... dis 30 %
Blake's Patent ... dis 15 @ 20 %
Trowels.
Lothrop's Brick and Plastering ... dis 10 %
Disston's " " ... dis 12½ %
Disston's Plastering ... dis 12½ %
Disston's Brick ... dis 10 %
Rose's Brick ... dis 5 %
Brades' Brick ... gold, net
Worrall's Brick and Plastering ... dis 15 %
Garden ... dis 20 %
Vises.
Trenton Vises, Solid Box.
30 to 160 lbs ... 16c
160 and over ... 19c
Peter Wright's ... ℘ ℔ 15½c. gold
Wilson's Solid Box ... dis 15 %
30 to 160 lbs ... 18c
160 and upward ... 22c
Wilson's Parallel ... dis 30 %
Backus & Union, Parallel ... dis 25 %
Buffalo, Parallel ... new list dis 20 %
Fisher & Norris' Double Screw Parallel ... dis 15 @ 15&5 %
Trenton Parallel ... dis 15 %
Bonney's Saw Filers ... dis 20 %
Wheel Barrows.
Pugsley & Chapman—Canal ... dis 10&5 %
Coal, Garden and Stone ... dis 20 %
Wheel Heads.
Brass Bushed ... per doz $3 25 net
Well Wheels.
Revised list ... dis 55&10 %

Wire.
Bright and Annealed ... Nos. 0 @ 18 dis 35 @ 40 %
" " ... " 19 @ 26 dis 45 @ 50 %
" " ... " 27 @ 36 dis 50 @ 55 %
Coppered ... " 0 @ 18 dis 25 @ 30 %
Galvanized, Nos. 0 to 12 ... dis 40 @ 45 %
Galvanized, Nos. 13 to 18 ... dis 45 @ 50 %
Tinned ... dis 20 @ 25 %
Cast Steel ... 5 @ 10 %
Tinned Broom Wire ... dis 25 @ 30 %
Galvanized Telegraph, Nos. 8 and 9 ... ℘ ℔ 10c @ 11c
" " 10 and 11 ... ℘ ℔ 11c @ 12c
" " 12 ... ℘ ℔ 11½c @ 12½c
Annealed Fence, Nos. 8 and 9 ... dis 35 @ 40 %
" Grape, " 10 to 14 ... dis 35 @ 40 %
Fence Staples ... ℘ ℔ 8½ @ 9 %
Stubs' Steel Wire ... $7 00 to ℔ gold
Wrenches.
American Adjustable ... dis 45 %
Baxter's Adjustable "S" ... dis 20 %
" Diagonal ... dis 20 %
Collins & Co.'s ... dis 40 %
Coes' Genuine ... dis 40&5 %
" Pattern (Wrought) ... dis 50 %
" " (Malleable) ... dis 60&10 %
Lindsay's Patent ... dis 25 %
Taft's Pattern ... dis 70 %
Davis' Patent Duplex ... new list dis 25 %
Bemis & Call's Patent Combination ... dis 20&5 %
Wringers.
Universal—Extra ... ℘ doz $72 00 @ —
Novelty ... ℘ doz 72 00 @ —
Sherman ... ℘ doz 67 00 @ —
Reliance ... ℘ doz 67 00 @ —
Providence ... ℘ doz 72 00 @ —
Monitor ... ℘ doz 65 00 @ —

TIN WARE AND TRIMMINGS.

STAMPED TIN WARE.

Basins.
Wash Basins, Handled, Plain Stamped ... dis 25 %
Inch ... 10 11 11½
Per doz ... $3·50 4·00 4·50
Wash Basins, Handled, Retinned ... dis 25 %
Inch ... 10 11 11½
Per doz ... $4·00 4·50 5·00
Wash Basins, with Feet, Plain Stamped ... dis 25 %
Inch ... 10 11 11½ 13½
Per doz ... $2·00 2·50 2·85 3·75
Wash Basins, with Feet, Retinned ... dis 25 %
Inch ... 10 11 11½ 13½
Per doz ... $3·00 3·50 4·00 5·00
Wash Basins, Stamped ... dis 25 %
Inch ... 10 10½ 11½
Per doz ... $1·70 2·10 2·50
Inch Shallow ... 10 11
Per doz ... $1·55 1·90
Wash Basins, Retinned ... dis 25 %
Inch ... 10 10½ 11½
Per doz ... $2·50 3·00 3·50
Inch Shallow ... 10 11
Per doz ... $2·00 2·60
Covers.
Bucket ... dis 10 %
1 pt. 1 qt. 2 3 4 6 8 10 12 qt.
Per gross ... $2·25 3·00 4·00 4·50 5·75 7·75 8·75 9·25 13·00
Coffee Pot ... dis 10 %
3 pt. 2 qt. 3 4 6 qt.
Per gross ... $1·25 1·50 1·75 2·25 3·50
Pot ... dis 10 %
Inch ... 7½ 7¾ 8¼ 8¾ 9½ 9¾ 10½
Per gross ... $5·50 6·00 6·75 7·25 8·00 8·50 10·25
Inch ... 10¾ 11¼ 11¾ 12¼ 13½
Per gross ... $11·00 11·75 12·50 15·50 19·00
Tea Kettle Breasts and Covers ... dis 10 %
Inch ... 5½ 6½ 7½ 8 8½ 9
Per gross ... $6·00 6·50 8·00 9·00 9·75 10·50
Inch ... 9½ 10 10½ 11 11½ 12½ 13½
Per gross ... $11·25 13·00 14·00 15·00 16·00 21·00 24·00
Dipper Bowls, Plain Stamped ... dis 25 %
Pints ... ½ ¾ 1 1½ Quarts ... 1 2 2½
Per doz. ·50 ·60 ·70 ·80 Per doz ... ·90 1·25 1·50
Dipper Bowls, Retinned ... dis 25 %
Pints ... ½ ¾ 1 1½ Quarts ... 1 2 2½
Per doz. ·75 ·95 1·00 1·15 Per doz ... 1·30 1·55 1·90
Pans.
Dish Pans, Tinned ... dis 25 %
Quarts ... 7 8 10 14 17 21 30
Per doz ... 8·50 9·50 11·00 13·00 16·00 19·00 30·00
Milk Pans, Plain Stamped ... dis 25 %
Quarts ... ½ 1 1½ 2 3 4 5 6 8 10
Per doz ... $ ·85 1·05 1·20 1·45 1·65 2·40 2·90 3·15 4·40 5·00
Milk Pans, Retinned ... dis 25 %
Quarts ... ½ 1 1½ 2 3 4 5 6 8 10
Per doz ... $1·15 1·40 1·60 1·90 2·15 3·00 3·40 3·80 5·20 6·00
Pie Plates ... dis 10 %
Inch ... 6 7 8 9 10 11
Per gross ... $4·50 5·00 7·25 7·75 10·50 12·00

JAPANNED TIN WARE.

Cannisters, Common ... dis 10 %
Pound ... ½ 1 2 3
Per doz ... $1·10 1·60 2·50 3·25
Cannisters, Hinged ... dis 10 %
Pound ... 1 2 3 4 6
Per doz ... $1·75 2·75 3·40 3·75 4·50
Candlesticks, Japanned ... dis 10 %
No ... 1 2
Per gross ... $6·00 7·00
Cake Boxes, Round ... per nest, $3·25, dis 10 %
" Square ... per nest, 4·25, dis 10 %
Chamber Pails, Japanned (Smith, Burns & Co.) ... dis 10 %
Nos ... 2 3 4 5
Green, per doz ... $8·00 9·00 10·50 12·50
Oak " ... $9·50 10·50 12·00 13·50
Dust Pans, Corrugated ... per gross, $22·00, dis 10 %
Box Graters ... per gross, $4·00, dis 10 %
Molasses Cups ... dis 10 %
Pint ... ½ 1 2
Per doz ... $1·25 ·50 2·75
Pepper Boxes Japanned ... dis 10 %
Per gross ... Small, $3·00; Large, $4·00
Toy Banks, House ... dis 0 %
No ... 1 2
Per gross ... $7·00 5·50
Toy Banks Gothic ... dis 10 %
No ... 1
Per gross ... $5·50
Toy Cups, Straight ... dis 10 %
No ... 1 2 3
Per gross ... $4·00 3·50 3·50
Toy Cups, Flaring, nests of (3) ... per gross, $2·50, dis 10 %
Toy Pails, Covered ... dis 10 %
No ... 1
Per gross ... $4·50
Toy Rattles ... per gross, $2·25, dis 10 %
Trunks. Wire Handled ... per nest (5) $1·50, dis 10 %
Spittoons, Tin ... per gross, No. 2, $30, No. 3, $27, dis 10 %

PLANISHED TIN WARE.

Planished Coffee Pots, Round ... dis 25 @ 30 %
Each ... ·60 ·75 ·85 ·95 1·15 1·25 1·30 1·40
Pints ... 1 2 3 4 5 6 7 8
Planished Tea Pots, Round ... dis 25 @ 30 %
Each ... ·70 ·80 ·95 1·05 1·25
Pints ... 2 3 4 5 6
Planished Tea Pots, Oval ... dis 25 @ 30 %
Each ... ·70 ·80 ·90 1·05 1·15 1·40 1·75
Pints ... 1 2 3 4 5 6 8
Planished Pepper Boxes, No. 1 ... per doz., $1·52
Planished Flour Dredges, No. 3, $2·10; 4, 2·45 ℘ dozen.
Planished Round Coffee Biggins ... dis 25 %
Pints ... 2 3 4 5 6 8
Each ... $1·00 1·10 1·20 1·40 1·60 2·00
Planished Oval Coffee Biggins ... dis 25 %
Pints ... 2 3 4 5 6 8
Each ... $1·15 1·25 1·40 1·60 1·80 2·25
Planished Oval Chafing Dishes, Imperial Covers ... dis 25 %
Inch ... 10 12 14 16 18 20 22 24
Each ... $3·85 5·00 6·25 7·60 9·00 11·50 15·00 16·50
Planished Oval Chafing Dishes, Low Covers ... dis 25 %
Inch ... 10 12 14 16 18 20
Each ... $3·25 4·35 5·20 6·20 7·80 9·25
Planished Low Dish Covers ... dis 25 %
Inch ... 10 11 12 14 16 18 20
Each ... $ ·70 ·80 1·00 1·25 1·50 2·00 2·75
Planished Imperial Dish Covers ... dis 25 %
Inch ... 10 11 12 14 16 18 20 22 24
Each ... $1·55 1·70 2·00 2·60 3·15 3·45 4·60 5·45 6·30
Planished Etnas, on Stands ... dis 25 %
Pints ... 1½ 2 3 4 5
Each ... $0·90 1·00 1·20 1·50 1·75
Planished Liquor Mixers ... dis 25 %
Nos ... 0 1 2
Per doz ... $2·00 2·10 2·45
Planished Oval Melon Molds ... dis 25 %
Nos ... 2 3 4 5 6 7 8 9
Each ... $·60 ·65 ·70 ·80 ·90 1·00 1·15 1·35
Planished Oval Tumbler Warmers ... dis 25 %
To fit 1, 2, 3, and 4 O. G. Urns ... each, $2·50
Planished Oval O. G. Urns ... dis 25 %
Nos ... 0 1 2 3 4 5 6 7 8
Each ... $4·90 5·45 6·30 7·00 7·75 9·25 11·25 12·50 15·50
Planished Round Urns ... dis 25 %
Nos ... 0 1 2 3 4 5 6 7
Each ... $4·20 4·85 5·45 6·30 7·75 9·00 11·00 14·25
Planished Round Oyster Dishes, (Complete) ... dis 25 %
Nos ... 1 2
Each ... $2·10 2·80
Planished Oyster Dish Plates ... dis 25 %
Nos ... 1 2
Each ... $0·25 0·30
Oyster Dish Covers ... dis 25 %
Nos ... 1 2
Each ... $0·30 0·85

Tea Pot Handles—P. S. & W. ... dis 20 %
Stow's Patent Hollow Tea Pot Handles.
No. 1, Small, 4½ inches ... per gross, $11·50
No. 2, Medium, 5½ " ... " 12·50
No. 3, Large, 6½ " ... " 13·50
No. 4, Ex. Large, 7½ in., for Wash Pitchers, &c. ... " 18·00
Stow's Patent. New Pattern.
No. 25, Small, 4½ inches ... per gross, $11·50
No. 35, Medium, 5½ " ... " 12·00
No. 45, Large, 6½ " ... " 13·00
Solid Iron, Tin Tipped.
No. 10, Small, 4½ inches ... per gross, $9·00
No. 15, Medium, 5½ " ... " 9·50
No. 20, Large, 6½ " ... " 10·75
Stow's Patent Hollow Tea Pot Handles, Adamantine Bronze—P. S. & W.
No. 12, Bronzed and Tin-Tipped ... per gross, $13·50
Saucepan Handles. Of Best Malleable Iron.
P. S. & W. ... dis 20 %
Japanned.
No. 1, 5½ inches long ... per gross, $3·50
No. 2, 6 " ... " 3·75
No. 3, 6¾ " ... " 4·00
No. 4, 7½ " ... " 4·25
No. 5, 8 " ... " 4·50
No. 6, 9 " ... " 4·75

Tinned.

No. 1, 5½ inches long	per gross,	$4·25
No. 2, 6	"		4·50
No. 3, 6¼	"		4·75
No. 4, 7¼	"		5·25
No. 5, 8	"		5·50
No. 6, 9	"		5·75
Japanned	per lb.,		·16
Tinned	"		·20
Iron Kettle Ears (P., S. & W.)	dis 45 %		

Half gross pairs in a package.

METALS.

IRON.—DUTY: Bars, 1 to 1½ cents per lb., Sheet, Band, Hoop and Scroll, 1¼ to 1¾ cents per lb. Provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 per ton; Polished Sheets, 3 cents per lb.; Wrought Scrap, $8 per ton; Cast Scrap, $6 per ton. All subject to a reduction of 10 per cent. Railroad, 20 cents per 100 lbs. Boiler and Plate, 1½ cents per lb.

Pig Iron—AMERICAN.			
Foundry No. 1	₩ ton,	$35 00	
Foundry No. 2	"	32 00 @	33 00
Gray Forge	"	28 00 @	31 00
White and Mottled	"		
SCOTCH.			
Coltness		39 00 @	40 00
Glengarnock	Irregular "		38 00
Eglinton	"	36 50 @	37 00
Bar Iron.			
Am. Rehned, at mill	₩ lb	2½c @	3 3c
Rails.			
Welsh, gold	₩ ton,	54 00 @	58 00
American, at works, currency	"	55 00 @	60 00
Old Rails, T, currency	"	40 00 @	41 00
Scrap.			
Wrought Scrap, from yard	"	41 00 @	42 50

Bar Iron from Store.

Common Iron.		
⅜ to 2 in. round and square	₩ ton,	$ 70 00
⅜x9-16 in " "	"	75 00
½ in. " "	"	77 50
2¼ to 3 in. "	"	75 00
1 to 6 in. wide x ⅜ and 1 in. thick	"	70 00
1¼ to 6 in wide x ⅜ & 5-16 in. thick	"	75 00
1 and 1¼ in. x ⅜ and 5-16	"	82 50
Swedish Iron		
1¼x⅜ and ½	"	170 00
1¼x⅜ to ⅝, and ½ square	"	165 00
1¼ to 5x⅜ to ⅜ and ⅝ to 2-in. square	"	160 00
6 to 8x⅜ and ½	"	170 00
Refined Iron.		
⅜ to 2 in. round and square	"	72 50
1 to 6 in. wide x ⅜ to 1 thick	"	72 50
1¼ to 6 in wide x ½ and 5-16 thick	"	77 50
1 and 1¼ x ¼ and 5-16	"	77 50
Large Rounds.		
2¼ to 2¾, round and square	"	80 00
3, 3¼ and 3½ in	"	85 00
3¾ and 4 in	"	92 50
Rods—⅜ and 11-16, round and square	"	77 50
½ and 9-16, " "	"	80 00
7-16, " "	"	85 00
⅝, " "	"	90 00
5-16, " "	"	95 00
¾, " "	"	100 00
⅞, " "	"	127 50
Band Iron.		
1 to 6 in. x 5-16 to No. 12	"	92 50
Horse Shoe Iron.		
⅜ and ½ x ⅜, to ½	"	107 50
1 x ⅜, to ⅝	"	
Ovals, Half Ovals and Half Rounds.		
⅜ to 1⅜	₩ ton,	$ 97 50
⅜ and 11-16	"	102 50
½ and 9-16	"	107 50
7-16	"	
⅜	"	
Nail Rods		
Best Norway	₩ lb @	8½ @ 9c
Norway Shapes		
¼ to 2 in. x ¼ to ⅝	₩ lb	8¼c
¼ to ⅝ square	"	
Norway Bar		
⅜ to 2 in. square		
Spring Steel		
1 to in. wide	"	7¾c
Tire Steel		
⅜ to 1½ x ⅜ and 5-16	"	8½c
⅜ & 1 x 3-16	"	9¼c
½ & 1 x ⅛	"	
Toe Calk Steel		
½ to ¾ x ⅜ to ½	"	7¾c
Plow Steel		
6 to 16 wide	"	8¾c
Sleigh Shoe Steel		
⅜ to 1½ x ⅜ to ½		6¾c
Hoops, ⅜ x No. 22	₩ ton	$160 00
" ⅜ x No. 20	"	130 00
" ½ x No. 19	"	125 00
" 1 and 1¼ x No. 18	"	115 00
" 1¼ to 2 and 1x1¼ x No. 13 and 14	"	105 00
Scroll Iron—⅜ x 12	"	132 50
" ⅜ x 10	"	132 50
" ⅜ x 3-16	"	127 50
" ½ x ¼	"	122 50
" ⅜ x 14	"	132 50
" ⅜ x 12	"	120 00
" ⅜ x 10	"	117 50
" ⅜ x 3-16	"	115 00
" ½ x ¼	"	112 50
" ½ x 12	"	115 00
" ½ x 10	"	112 50
" ½ x 3-16	"	110 00
" ⅝ x ¼	"	107 50
" ⅝ x 14	"	
" ⅝ x 12	"	110 00
" ⅝ x 10	"	107 50
" ⅝ x 3-16	"	105 00
" ⅝ x ¼	"	102 50
" ¾ x 14	"	120 00

Sheet Iron.

	Common English.	R. G. American.	R. G. English.
Nos. 10 to 20 ₩ lb	4½ @ 4¾c	5½c	6c
21 to 24 "	5 @ 5¼c	6c	6¼c
25 to 26 "	5½c	6¼c	6½c
27 "	5¾c	6¾c	7c
28 "	6c	7c	7¼c
30 "	7¼c		

Galvanized, 10 to 20, prime ₩ lb	10½c
" 21 to 24 "	11¼c
" 25 to 26 "	12½c
" 27 "	13¼c
Patent Polished "	15 @ 16c
Russia, Nos. 8 to 11 ₩ lb	19c
" Nos. 12 to 16 "	19c
" Stained, No. 1 "	17½c
Belgian "	12c

One piece Corrugated Sheet Iron Elbows.

CHARCOAL IRON

4½	5	5½	6	7 inch.
$3·75	4·25	5·25	5·25	6·50 per doz.

RUSSIA IRON.

4½	5	5½	6	7 inch.
$8·00	10·00	13·00	13·00	14·00 per doz.

Adjustable Stove Pipe Elbows.

CHARCOAL IRON.

4	4½	5	5½	6	7 inch.
$3·25	3·75	4·25	4·75	5·25	6 25 per doz.

RUSSIA IRON.

4	4½	5	5½	6	7 inch.
$7·00	8·00	9·50	10·75	11·75	13·75 per doz.

Discount on orders of 10 doz. 5 %.
" " " 25 doz. 10 %.

Brass.

ROLLED AND IN SHEETS.
(Brown & Sharp's Gauge.*)
For the purchase of 100 pounds and over at one time

HIGH BRASS.

All Nos. to No. 28, and widths 14 in. and under	34c
All Nos. to No. 28, inclusive, and widths over 14 to 20 in. inclusive	37c
Over 20 in. to 30 in. inclusive	40c
½c ₩ lb advance on each No. above No. 28 to 38, inclusive.	
All Brass thinner than No. 38 in Platers' Brass at	53c
Sheets 24x48 in., and all sheets cut to particular sizes and lengths	40c
Platers' Rulers	44c
Sheets wider than 30 in. and under 40 in	44c
" 40 in. and over	46c
Circular sheets, in diam. from 4 in. to 14 inclusive	44c
" " " over 14 in. to 20 "	47c
" " " " 20 in. to 30 "	50c
" " " " 30 in. to 40 "	53c
" " " 40 in.	56c
Brass Rods above No. 0, and under 1 in	43c
" " 1 in. and over	47c

LOW BRASS.

4c ₩ lb more than High Brass.
Gilding Metals, 7c ₩ lb more than High Brass.
Platers' or Gold Metal { ½ in Bars / Sawed } 46c 49c

FOR SLITTING: Metal in Width.

2 in. to ½ in., to No. 30, inclusive, 1c ₩ lb advance.
2 in. to 1 in., thinner than No. 30, 2c ₩ lb advance.
2 in. to ½ in., " " 30, 3c " "
½ in. and less to No. 30, 2c ₩ lb advance.
½ in. and less thinner than No. 30, 5c ₩ lb advance.
10 % discount.

SCRAP—NEW METAL.

High Brass Scrap, 17 cents, net.
Low " 19 " "
Gilding, 21 cents, net.
Turnings, Filings and Chips, half the price of Scrap net.

BRASS AND COPPER WIRE.
(Stub's Wire Gauge).

	High Brass.	Low Brass.	Gild'g and Cop'r
Nos. 0 to 20	37	41	47
Nos. 21, 22, 23	38	42	48
Nos. 24 and 25	39	43	49

Brass Wire straightened and cut, 4 cents advance
10 % discount

FINE WIRE—NET PRICES.

	High Brass.	Low Brass.	Gild'g and Cop'r
No. 26	0·41	0·45	0·51
No. 27	0·44	0·48	0·54
No. 28	0·46	0·50	0·56
No. 29	0·48	0·52	0·58
No. 30	0·50	0·54	0·62
No. 31	0·52	0·56	0·66
No. 32	0·55	0·60	0·71
No. 33	0·60	0·64	0·81
No. 34	0·64	0·68	0·91
No. 35	0·69	0·73	1·05
No. 36	0·78	0·82	1·15
No. 37	0·98	0·98	1·28
No. 38	1·28	1·28	1·58

Ten cents per pound extra for Spooling.

TUBING.
(Brown & Sharpe's Gauge.)

	₩ lb
Plain to No. 20, inclusive	30·52
Nos. 21, 22, 23, 2c. advance on List for each No.	
Nos. 24, 25, 26, 4c. " " "	
Above No. 26 special rates.	
Plain Tube, 1-4 inch	68
" 3-16 "	1 53
" 1-8 "	1 78

All Mandrel-Drawn Tubes 5c. advance on List.
Fancy Tubing 4c. advance on List above Plain.
English, Scotch, and Extra Patterns Fancy Tubing to No. 20 61
Tubing sawed or cut 2 to 4 ft. long, 2c. advance on List.
Add to two cents a half-cent for each additional cutting under two feet. 10 % discount.
BRASS DOOR RAIL—48 cents per lb.—10 % dis.

BELT AND HOSE COPPER RIVETS AND BURS.

Price per ₩ lb	49	50	52	54	56	58	60	64	68c
Nos.	7	8	9	10	11	12	13	14	15

Braziers Rivets, 43 cents per pound discount 10 %.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire
4 per cent. 12 inch. to No. 26	0·75	0·90
6 " " " "	0·85	1·00
10 " " " "	1·05	1·25
15 " " " "	1·30	1·55
18 " " " "	1·45	1·75
20 " " " "	1·55	

Discount 10 %.
German Silver Sheet over 12 inches wide and weighing more than 10 lbs. ₩ lb net
Advance two cents for each additional inch in width above 12 inches, and two cents per pound on each No. thinner than Nos. 26 to 36, inclusive.
All German Silver thinner than No. 36 is Platers' at 50 cents per pound additional.
German Silver Scrap, one-third less than net price of 12 inch Market Metal; German Silver Turnings, Filings and Chips, half the price of Scrap.
* Brown & Sharp's Gauge is about two numbers finer than Stubs' Wire Gauge.

COPPER—DUTY: Pig, Bar and Ingot, 5c.; old copper, 4 cents ₩ lb; Manufactured (including all articles of which copper is a component of chief value) 45 % ad valorem. All subject to a reduction of 10 per cent.

American Ingot	₩ lb 26 @ 26½c
English "	

SHEATHING, BRAZIERS COPPER, BOLTS, &C.

Braziers Copper, ordinary sizes, over 16 oz., per square foot	35c ₩ lb
Braziers' Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot	38c. "
Braziers Copper, 12 oz. per square foot and lighter	41c. "
Circles less than 24 inch in diameter	38c. ₩ lb
Circles, 24 inch diameter and over	41c. "
Segment and Pattern Sheets	38c. "
Locomotive Fire Box Sheets	35c. "
Sheathing Copper, over 12 oz. per sq. ft.	39c. "
" 12 oz. ₩ sq. ft. and lighter	41c. "
Bolt Copper	35c. "

No Copper in Sheathing except 14x48 inches, and not to exceed 34 oz. to the square foot.

TINNING.

14x48, by the case	8c. ₩ sheet
14x48, less than case	10c. "
Boiler Sizes, 7 and 8 inch	12c. "
" 9 inch	15c. "
Other sizes not larger than 30x60	2½c. ₩ sq.
Larger than 30x60	5c. "
Copper Bottoms 34 @ 36c.	₩ lb net

O'NEILL'S PATENT PLANISHED COPPER.
14x48.

14 and 16 oz. and heavier	39c.	By the case, 38c.	₩ sheet
12 oz. and lighter	42c.	" " 41c.	"

Boiler Sizes.

7 in., 14x52.	8 in., 14x56.	9 in., 14x60
14 and 16 oz. and heavier	41c.	By the case, 40c. ₩ lb
(And all sizes not over 20 inches wide.)		
30x60		
14 and 16 oz. and heavier	43c.	₩ lb
12 oz.	46c.	"

LEAD—DUTY: Pig, $2 per 100 lbs.; old Lead, 1½ cent per lb.; Pipe and Sheet, 2¾ cents per lb. All subject to a reduction of 10 per cent.

Spanish	6¼ @ 6¾c gold
German Refined	6¼ @ 6¾c gold
English	6½ @ 7c gold
American	6 @ 6½c gold
Bar	dis 10 % 8¾c.
Pipe	dis 10 % 9c.
Tin Lined Pipe	dis 10 % 16½c.
Sheet	dis 10 % 8c.
Shot	dis 10 %. Drop, 9c.; Buck, 9¼c.
Solder	No. 1, 16 @ 17c; No. 2, 15c

STEEL—DUTY: Bars, Ingots, Sheets and Coils, valued at 7 cents per lb., or under, 2¼ cents; over 7 cents, and not above 11, 3 cents per lb.; over 11, 3¼ cents per lb. and 10 % ad val. Railway Bars 1¼ cents per lb. Railway Bars, in part Steel, 1 cent per lb. All subject to a reduction of 10 per cent. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as Steel.

American Cast Steel.

Tool	16c
Spring	12½c
Homogeneous	12½c
Tire	12½ @ 13½c
Machinery (round and square)	11½ @ 12c
File	12½c
Sheet	14 @ 16c
Saw Plate, mill and mulay	14 @ 16½c
Saw Plate, gang and X cut	13 @ 14c
" circular as to size	18 @ 30c

Chrome Steel.

Tool	₩ lb 20 @ 21c
Tool, extra fine	" 40 @ 75c
Spring	₩ lb 12c and upward
Machinery	₩ lb 14c.
Hammer	" 15c,
Gun or Homogeneous	" 16c

English Steel.—payable in gold, dis 5 % cash.

Best Cast	₩ lb 18c
Extra Cast	" 19c
Round Machinery, Cast	" 11½c
Swaged, Cast	" 18c
Best Double Shear	" 18c
Blister, 1st quality	" 13½c
" 2d quality	" 11½c
" 3d quality	" 10½c
German Steel, Best	" 11½c
do 2d quality	" 10½c
Sheet Cast Steel, 1st quality	" 18c
" " 2d quality	" 16c
" " 3d quality	" 14c
File Steel, Flat and ½ Round	" 12½c
" Square and Round	" 13c
" Mill	" 13½c
" Taper to 4 inch	" 14c
" Taper 3 and 3¼ inch	" 18c

SPELTER—DUTY: In Pigs, Bars and Plates, $1 50 per 100 lbs.—less 10 per cent.

Silesian, cash	6¾ @ 7c., gold
American "	7¾ @ 11c., currency

TIN—DUTY: Plates, Sheets, Tagger and Terne, 15 per cent. ad val.; Electro-galvanized Plates, 2 cents per ₩ lb; Manufactures of, not enumerated, 35 per cent. ad val.—all subject to a reduction of 10 per cent. Bars, Block and Pigs, free. Banca, subject to duty of 10 per cent.

Banca	₩ lb 26 @ 27c., gold
Straits	₩ lb 24 @ 25c., gold
English	₩ lb 21 @ 22c., gold

CHARCOAL TIN PLATE.

I C 10x14, Prime Charcoal	12·00
12x12, "	12·50
14x20, "	12·75
I X 10x14, "	14·25
12x12, "	14·75
14x20, "	15·25
D C 12½x17 "	11·50
D X 12½x17 "	13·75
For each additional X add	2·25

COKE TIN-PLATE.

	Best.	2d Quality.	Ordinary.
I C 10x14	$11·25 @ 11·50	10·25 @ 10·50	9·25 @ 9·75
I C 12x12	11·75	11·00	
I C 14x20	12·00	11·00	

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20	$10·75 @ 11·00	9·75 @ 10·50	7·00 @ 9·50
I X 14x20	13·50	12·25 @ 13·00	10·75 @ 12·25
I C 20x28	23·50	21·25 @ 23·00	18·75 @ 21·25
I X 20x28	26·25	24·25	
I C 20x200 ft.	24·75		

ZINC.—DUTY: Pig or Block, $1 50 per 100 lbs. Sheet, 2½c. ₩ lb. All subject to a reduction of 10 per cent.

Sheet	cask 9½c
"	open 10c

Paper Stock, Old Metals, &c.

(*Dealers' Selling Prices.*)

Canvas linen	6½ @
" cotton, No. 1	@ 7
" " No. 2	@ 4
White linen rags, No. 1	@ 7½
" " No. 2	@ 5½
Colored	2½ @
Mixed woolens	@ 3
Soft woolens	@ 6½
Gunny bagging	1¾ @ 2
Jute Butts	2¾ @ 2¾
Kentucky bagging	5¼ @ 5½
Book stock	4 @ 4½
Waste paper and scraps	1½ @ 3
Rope cuttings	1½ @ 3
Kentucky Bale rope	4 @ 4½
Oakum junk, No. 1	5½ @ 5¾
" No. 2	4 @ 4¼
Grass rope	4 @ 4½
Tarred Shaking	1½ @ 2
White Collar Cuttings, all paper	7 @ ..
" " muslin lined	5 @ ..
" Envelope "	7 @ ..
Hard White Shavings, No. 1	6½ @ ..
Soft " " No. 2	6 @ ..
White Shavings, No. 3	5¼ @ 6
Mixed Shavings, part white	4 @ 4¼
Imperfections, No. 2, best folded sheets	5 @ ..
" " 1, Heavy Stock	4¼ @ 5
Book Stock, Mixed	3½ @ 4
" " No. 2, light	2½ @ 3
Prints	1½ @ 2
Pure Manilas	2¼ @ 2¾
Bogus Manilas and Hardwares	1½ @ 1¾
Commons	1 @ ..
Binders' Board Cuttings	1½ @ 2
Straw Board Cuttings	1¼ @ 1⅝

Old Metal.

Copper	21 @ 23
Yellow metal	16 @ 17
Brass	16 @ 17
Heavy Composition	19 @ 20
Old lead, solid	7
Tea lead	5¼
Wrought Iron	1¼ @ 1¾
Sheet Iron	0¾ @
Cast Iron	1 @ 1¼
Machinery Iron	1¼ @ 1½
Zinc	5½
Pewter, No. 1	23 @ 24
" No. 2	10 @ 12
Spelter	7

Paints, Oils, etc.

Paints.

Black, lamp—Coach Painters	₩ lb 20c
" Ordinary	8c
" Ivory Drop, fair	15c
" " best	28c
Black Paint, in oil	kegs, 8c.; asst'd cans, 11 c
Blue, Prussian, fair to best	50 @ 75c
" " " in oil	35 @ 65c
" Chinese, dry	33c
" Ultamarine	25 @ 30c
Brown, Spanish	1¼c
" Van Dyke	9c
Carmine, 40	$12 00
Green, Chrome	15 @ 23c
" " in oil	18 @ 25c
" Paris	good, 33c; best, 40c
" " in oil	30c; " 45c
Mineral Paints	1¼ @ 4c
Orange Mineral	14½c
Red Lead, American	9½c
" English	10½c
" Venetian (N. C.) dry	2¾c
" " in oil	asst'd cans, 11c; kegs, 9½c
" Indian, dry	10c
Rose Pink	13c
Sienna, American, Raw	4c
" Burnt	4½c
" " in oil	16 @ 20c
" Raw "	15 @ 25c
Umber, Burnt	4 @ 8c
" " in oil	16 @ 21c
" Raw	2½ @ 7½c
" " in oil	16 @ 22c
Vermillion, Chinese	$1 62
" English	1 75
" Trieste	1 52
" American, Common	22c
White Lead, American, pure dry	10½c
" " in oil	11½c
White, Paris, English, prime	in bbls. 2½ @ 2¾c
Yellow Ochre French	2½ @ 2¾c
" " in oil	asst'd cans, 11c; kegs, 8½c
" Vermont	in casks 1½c
" Chrome	17 @ 21c
" in oil	18 @ 22c
Zinc White, American No. 1 dry	9c
" " 1, in oil	11c
" French (Paris)	11 c
" " in oil	12

Oils.

Linseed Raw	₩ gal. casks, 97c. bbls. 98c.
" Boiled	" $1·02 " $1·03
Whale, Crude	"
" Bleached Winter	"
Sperm, Crude	" 1·50
" Winter unbleached	" 1.70
" Bleached	" 1·75
Seal, Extra Refined	"
Lard, Pure Winter	" 82c
" Spring	"
Cotton Seed, Crude	" 42½c
" Southern Yellow	46½c @ 47½c
" White	
Neatsfoot, Winter	70c @ $1·10
Natural Lubricating	38c @ 40c

Sundries.

Asphaltum	9c
Benzine	₩ gal. 16c
Chalk	1½c
" Block	
Dryer, Patent, Am'n	asst'd cans, 10½c.; kegs 9c
" " English	" 11c.; " 9c
Flocks	
Frostings	50c
Glue, White	33 @ 47c
" Sheet	32c
Glaziers' Points, Zinc	9c
Gum, Copal	36c
" Damar	25c
" Shellac, English	60c
" " dark	56c
Litharge	10c
Pumice Stone, selected Lumps	4 @ 6c
" powdered	4c
Putty in bladders	3½c
" in bulk	3c
Rotton Stone, soft, English	8c
Spirits Turpentine	48c
Whiting, Spanish	1c

Glass.

French Window—1st, 2d, 3d, and 4th qualities. Per box of 50 feet.

SINGLE.

SIZES.	I.	II.	III.	
6 x 8 to 10 x 15	$10·25	$9·25	$8·75	$8·00
11 x 14 to 16 x 24	12·00	11·00	10·00	9·50
18 x 22 to 20 x 30	15·00	13·50	12·00	10·50
15 x 36 to 24 x 30	17·50	15·25	12·50	
26 x 28 to 24 x 36	18·25	16·00	13·25	
26 x 36 to 26 x 44	20·00	18·00	14·50	
26 x 46 to 30 x 50	21·00	19·00	15·25	
30 x 52 to 30 x 54	22·50	20·25	16·25	
30 x 56 to 34 x 56	24·50	21·75	19·00	
34 x 58 to 34 x 60	26·00	24·50	21·50	
36 x 60 to 40 x 60	30·50	27·00	24·50	

DOUBLE.

SIZES.	I.	II.	III.	IV.
6 x 8 to 10 x 15	$16·50	$15·00	$14·00	$13·00
11 x 14 to 16 x 24	19·25	17·75	16·00	15·25
18 x 22 to 20 x 30	24·00	21·75	19·25	
15 x 36 to 24 x 30	28·00	24·50	20·00	
26 x 28 to 24 x 36	29·25	25·75	21·25	
26 x 36 to 26 x 44	32·00	29·00	23·25	
26 x 46 to 30 x 50	33·75	30·50	24·50	
30 x 52 to 30 x 54	36·00	32·50	26·00	
30 x 56 to 34 x 56	39·25	35·00	30·50	
34 x 58 to 34 x 60	41·75	39·25	34·75	
36 x 60 to 40 x 60	49·00	43·25	39·25	

Sizes above—$12·00 per box extra for every 5 inches.
An additional 10 per cent. will be charged for all Glass more than 40 inches wide. All sizes above 52 inches in length, and not making more than 81 united inches, will be charged in the 84 united inches bracket.
Discounts 50 %, 10 % and 5 % to 60 %.

ESTABLISHED IN 1849.

JEWETT'S BUFFALO REFRIGERATORS.

END FOR CATALOGUE TO

JOHN C. JEWETT & SONS,

Manufacturers,

BUFFALO, N. Y.

Letters of recommendation have been received from the following firms, being but few of the many received from our customers throughout the country.

ISAAC S. WILLIAMS & CO.	Philadelphia, Pa.
C. A. BUTTLES	Milwaukee, Wis.
MAGILL BROS.	Louisville, Ky.
KETCHAM & VIOT	Toledo, Ohio.
F. WETMORE & CO.	Detroit, Mich.
S. P. PIERCE & CO	Syracuse, N. Y.
FARES & FISCHER	Cincinnati, O.
KENNEDY, DEFOREST & RANDALL	Cleveland, O.
W. W. PIERCE & CO.	Erie, Pa.
F. L. McCOLAT	Indianapolis, Ind.
E. A. BURROWS & CO.	Troy, N. Y.
STOWELL, PLOWMAN & CO.	Elmira, N. Y.
MILLS & DAVIS	Pittsfield, Mass.
BENSON & GILLESPIE	Binghamton, N. Y.
JOHN MACLAY	Dubuque, Iowa.
DEMMLER BROS.	Pittsburg, Pa.
G. & C. W. BILLINGS	North Adams, Mass.
HOPSON & SHEPARD	Utica, N. Y

ZERO Refrigerator,

WITH

Water, Wine & Milk Cooler

is the **BEST**

MEAT, FRUIT & ICE PRESERVER

in the World.

Highest Award, American Institute 1867, 1869, 1871. New York, New England, New Hampshire, N. Carolina, Texas, Louisiana, Illinois, State Fairs. Refer to **Hart, Bliven & Mead Mfg. Co, Russell & Erwin Mfg. Co.** Send for Catalogue.

ALEX. M. LESLEY, Manufacturer,
224 & 226 W. 23d St., New York City.

Grindstones, Emery, &c.

J. McDERMOTT & CO

MINERS AND MANUFACTURERS OF

GRINDSTONES.

Black River, Independence and Berea Grits.

BUILDING STONES

of every description, from the above quarries.

OFFICE, National Bank Buildings, Cor. Superior and Water Sts. CLEVELAND,

Walter R. Wood,

GRINDSTONES

283 FRONT STREET,

NEW YORK.

EMERY WHEELS AND MACHINERY

Upon which to run the same, of all kinds.

EMERY Emery Cloth, Mill Stone CEMENT. TRADE MARK. DIAMOND Tools, Oil Stones,

Soapstone Register Borders.

For particulars, address,

UNION STONE CO.,

6 Exchange and 26 Devonshire Streets, Boston, Mass.

THE TANITE COMPANY

Emery Wheels TANITE Emery Grinders

STROUDSBURG MONROE Co. PA.

GRINDSTONES

2000 TONS ON HAND. FOUNDED 1810.

J. E. MITCHELL. PHILA.

Bemis & Call Hardware & Tool Co.'s

This Wrench can be furnished with Briggs Pat. Nut or Sleeve.

PATENT COMBINATION WRENCH.

These Wrenches are made from the best of Wrought Iron, with Steel Head and Jaw, Case-Hardened throughout. And not only combine all of the superior qualities of our Cylinder or Gas Pipe Wrenches, but also all requisite Combinations of a regular Nut Wrench. Thus making a Combination which has no equal.

For Circulars and Price List, Address,

BEMIS & CALL HARDWARE & TOOL CO. Springfield Mass.

Nos. 139, 141, 143 **MARKT & CO.,** Centre Street,

MANUFACTURERS AND IMPORTERS OF

NEW YORK.

HARDWARE SPECIALTIES.

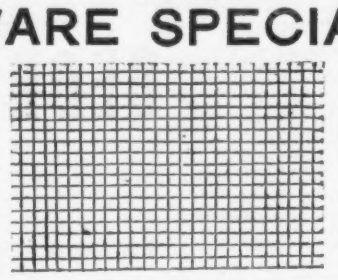
DOOR KNOBS (Lava, Porcelain and Mineral.)

Shutter, Picture and Drawer Knobs.

Plate and Drop Escutcheons.

Picture Nails and Curtain Pins.

Bright Wire Goods.



Wire Cloth for Screens.

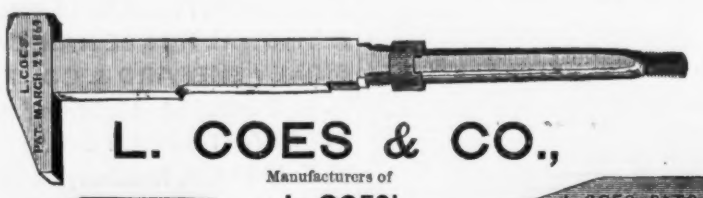
Furniture Nails.

Bright Halter and Coil Chains.

French Wire Nails.

Wrought Iron & Brass Butts.

To buyers of Wire Cloth we give the assurance that our imported Screen Cloth is of best quality and finish—it excels in beauty and durability of color. We keep plain, green, gray, black, fancy patterns and landscape in stock, and all orders for ordinary widths from 24 to 48 inches will be promptly executed. Prices guaranteed satisfactory.



L. COES & CO.,

Manufacturers of

L. COES' Genuine Improved *PATENT*

SCREW

WRENCHES,

Worcester, Mass.

Our Mr. L. Coes, formerly senior member of the firm of L. & A. G. Coes, established in 1839, is the Original Inventor of the Screw Wrench, and has, by making the bar *wider*, where the strain comes most severe, and screwing a nut up firmly against four *square* shoulders inside the ferrule, thereby *effectually* preventing the ferrule from being thrust back into the handle or getting loose, and making a larger screw than in the old wrench, fully succeeded in making a 12 inch wrench stronger than a 15 inch made in the usual manner. All sizes are made in this way, and are undoubtedly the strongest and best finished Screw Wrenches in the market.

There are *Imitations* of our goods offered for sale, that, without question, infringe on our Patents.

We hold Patents bearing date Nov. 10th, 1863 (re-issued June 1st, 1869). June 26th 1866, March 23d, 1869 (re-issued April 12th, 1870, and May 14th, 1872), which fully cover all our improvements. One of the above cuts represents a sectional view, showing the nut under the ferrule, and the strengthened bar, that part being covered by the jaw, as seen in the cut of wrench complete. None genuine unless stamped

"L. COES & CO"

Warehouse, 97 Chambers and 81 Reade Streets, New York.

HORACE DURRIE & CO., Agent,

NEW ENGLAND AGENTS.

HOGAN, CLARKE & SLEEPER,

105 Broad St., Boston.

SMITH, BURNS & CO.,

Manufacturers of

Galvanized and Japanned Sheet Iron Goods, and all kinds of Stamped, Pieced, Japanned and Galvanized

TIN WARE.

Oval, Square and Round Wash Boilers, Tea Kettles, Coffee Pots, Fluted, Octagon, Oval and Round Tea and Coffee Pots.

Japanned and Galvanized Chamber Pails, Water Pails, Well Buckets, Ash Cans, EXCELSIOR Fry Pans, Broilers, &c.

Toilet Ware, Water Coolers, Watering Pots, Plunge, Infant, Hip, Sponge and Foot Baths.

Patent Corrugated Riveted Bottom

COAL HODS

Warehouse, 46 Cliff Street, between Beekman and Fulton Streets, NEW YORK.

New Catalogue now ready.

JOHN WILSON'S CELEBRATED BUTCHERS' KNIVES, BUTCHERS' STEELS, AND SHOE KNIVES.

CORPORATE TRADE MARK. FOUR PEPPERCORNS AND A DIAMOND.

GRANTED A.D. 1766, BY THE CORPORATION OF CUTLERS OF SHEFFIELD, AND PROTECTED BY ACT OF PARLIAMENT.

THE TRADE MARK, IN ADDITION TO THE NAME, IS STAMPED UPON EVERY ARTICLE MANUFACTURED BY

JOHN WILSON.

BUYERS ARE SPECIALLY CAUTIONED AGAINST IMITATIONS OF THE MARK, AND THE SUBSTITUTION OF COUNTERFEITS BEARING THE NAME, "WILSON," ONLY.

Works:—SYCAMORE STREET, SHEFFIELD. ESTABLISHED in the Year 1750.

BEAM & MURRAY,

IMPORTERS OF

Anvils, Chains, Pocket Cutlery Guns, Files,

BIRMINGHAM, SHEFFIELD & GERMAN HARDWARE,

Wostenholm's IXL Pocket Knives & Razors, Butcher's Files, Tools, &c

No. 54 Cliff Street, NEW YORK.

White Lead, &c.

John T. Lewis & Bros.,

No. 231 South Front St., PHILADELPHIA.

JOHN T. LEWIS & BROS. WARRANTED PURE WHITE LEAD. PHILADA.

TRADE MARK.

MANUFACTURERS OF

PURE WHITE LEAD, RED LEAD, Litharge, Orange Mineral, Linseed Oil AND PAINTERS' COLORS.

ATLANTIC WHITE LEAD CO. ROBERT COLGATE & CO. PURE WARRANTED

TRADE MARK.

The Atlantic White Lead and Linseed Oil Company,

MANUFACTURERS OF

White Lead (Atlantic), Red Lead Litharge & Linseed Oil.

ROBERT COLGATE & CO., 287 Pearl Street, New York.

Established 1782.

WETHERILL & BRO.,

Manufacturers of

White Lead, Red Lead, Litharge & Orange Mineral.

OFFICES, { 31st. ST. BELOW CHESTNUT, No. 41 NORTH FRONT STREET, } PHILADELPHIA.

Brooklyn White Lead Co.

TRADE MARK.

White Lead, Red Lead and Litharge.

89 Malden Lane, NEW YORK.

FISHER HOWE, Treas.

JOHN JEWETT & SONS

Manufacturers of the well known Brand of

WHITE LEAD.

JEWETT & SONS' PERFECTLY PURE WHITE LEAD.

TRADE MARK.

Also Manufacturers of

LINSEED OIL AND FLOOR OIL CLOTHS,

182 Front Street NEW YORK

HASKINS'

Machine Company,

THE HASKINS ENGINE

SEMI-PORTABLE

Fitchburg, Mass.,

Manufacturers of

VERTICAL STEAM

Engines & Boilers.

The Safest and Best in the Market.

SEND FOR CIRCULAR.

Patented July 9th, 1872.

PATENT IMPROVED STEAM TRAP.

The only self-regulating Steam Trap in the world. For full description send for circular to

A. L. JONES,

Steam Heating Establishment, 150 S. 4th Street, Phila.

JOHNSON'S PATENT UNIVERSAL LATHE CHUCK.

We invite attention to the superior construction of this chuck. Its working parts are **absolutely protected from dirt and chips.** It is strong, compact and durable, and will hold the greatest variety of work, as the jaws are adjustable with a range the full diameter of the chuck. For Price List, address,

Lambertville Iron Works, Lambertville, N. J.

WILLIAMS WHITE & CHURCHILL,

Successors to

MACKRELL & RICHARDSON MFG. COMPANY,

Manufacturers of

Builders' Hardware,

Locks, Hinges, Hooks and Staples, Awning Hooks, Meat Hooks, Pincers, Champion Noiseless Pulleys,

CHAIN PULLEYS, &c.

Factory, cor. Flushing and Nostrand Avenues BROOKLYN.

Warehouse, 73 Warren St., N. Y.

Hardware.

ESTABLISHED 1836.

ALFRED FIELD & CO.,

Foreign Hardware Commission Merchants

IMPORTERS AND EXPORTERS.

Offices and Warehouses:

Birmingham, Sheffield and Liverpool, England; New York, Philadelphia, Cincinnati and New Orleans, U. S.; Montreal, Canada.

In addition to our **Commission business,** and to meet the wants of the **Wholesale Trade only,** we are carrying in stock at **47 John and 5 Dutch Sts., N. Y., and 75 Gravier St., New Orleans,** leading goods in our line, such as,

Anvils, Chains, Vises, John Wilson's Goods, Chesterman's and other **Tapes, Brades London Trowels, Grass Hooks, Guns,** Padlocks, Curry Combs, **Pocket and Table Cutlery, Screws,** Galvanized Twisted Clothes Lines, Eley's Caps, Wads and Cartridge Cases **and a large line of Miscellaneous Goods.**

We are Sole Agents for Lawrence's new Patent Curry Combs, to which we call attention of the trade.

HERMANN BOKER & CO.,

OFFICES AND WAREHOUSES:

NEW YORK, 101 and 103 Duane and 91 and 93 Thomas Streets.
REMSCHEID and SOLINGEN (Prussia.) H. Boker & Co.
SHEFFIELD (England), No. 3 Arundal Lane, Represented by Mr. Arthur Lee.
LIEGE (Belgium), Represented by Mr. Louis Muller.

Manufacturers and Importers of **Cutlery, Guns, Hardware** and **Railroad Material.**
Proprietors of **TRENTON VISE AND TOOL WORKS, Trenton, N. J.**—Vises, Picks, Mattocks, Grub Hoes, Sledges, Hammers, Bridge Work, Turn Tables, etc.
Proprietors of the **MANHATTAN CUTLERY CO.,** "O. K." Razors.
Sole Agents for **LAMSON & GOODNOW MFG. CO., Shelburne Falls, Mass.**—Table Cutlery and Butcher Knives.
W. & S. Butcher's Files, Edge Tools and Razors, the largest stock in the United States.
Geo. Wostenholm & Son's Knives, Scissors and Razors, the largest stock in the U. S.
John Wilson's Butcher and Shoe Knives.
Peter Wright's and Armitage Anvils.

We always have on hand a full assortment of

German and English Hardware, Cutlery, Guns, Gun Material, Chains, Heavy Goods.

SPEAR & JACKSON,

Sheffield, England,

MANUFACTURERS OF

Saws, Files, Edge Tools and Steel.

JOHN L. FISHER. Agent
116 Duane Street, NEW YORK.

ROY & COMPANY,

West Troy, N. Y.,

Manufacturers of

Wrought Iron Butts, Strap and T Hinges,

PLATE AND HOOK HINGES,
Cold Pressed Nuts and Washers, Felloe Clips, &c.
JOHN L. FISHER, Agent, 116 Duane Street, New York.

STANLEY WORKS,

MANUFACTURERS OF

Wrought Butts, Strap and T Hinges.
Bronzed Butts and Bolts.
Wrought Barrel, Square and Shutter Bolts.
Wrought Chest Handles, Washers, Flush Bolts, &c.
79 CHAMBERS ST., NEW YORK.
Factory at New Britain, CONNECTICUT.

CROOKE & CO.,

MANUFACTURERS OF

WROUGHT IRON BUTTS,

All our goods are manufactured from patent faced iron plates; they have a smooth face and bright finish.
163 & 165 Mulberry Street. New York.

QUACKENBUSH, TOWNSEND & CO.,

Successors to

SEARS, LEAVITT & CO.,

Importers and Wholesale Dealers in

Hardware, Cutlery, &c.,

59 and 61 Reade Street, New York.

THOMAS JOWITT & SONS,
(Sheffield, England,)
Celebrated FILES AND HORSE RASPS.
Rough and Ready and
CLIPPER SCYTHES,
Warranted.

DEPOT FOR
THOS. JOWITT & SON TESTED CORPORATE MARK

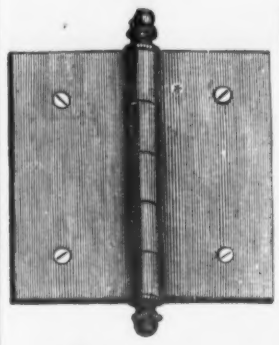
"BEAVER"
(American,)
FILES AND HORSE RASPS.
"WIDE AWAKE"
AXES.

MANY & MARSHALL,

MANUFACTURERS OF

BUILDERS' HARDWARE,

48 WARREN STREET, NEW YORK.



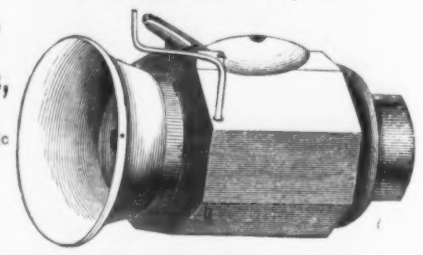
MORTISE & RIM LOCKS OF EVERY DESCRIPTION.

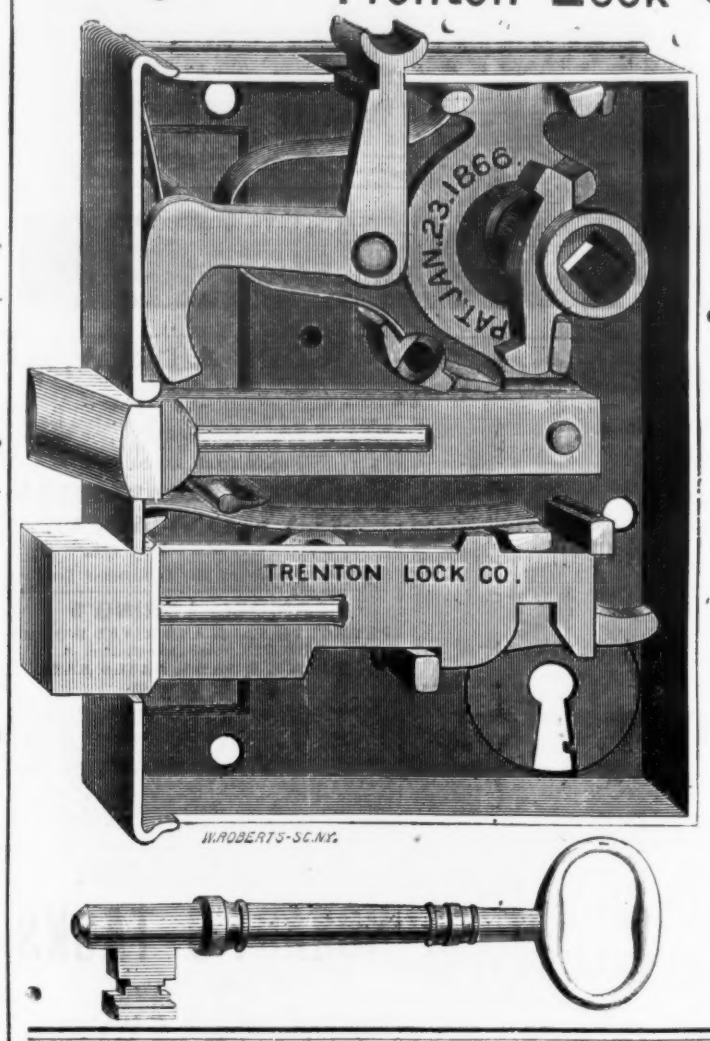
Hand Plated and Pure Bronze Metal
Butts, Knobs, Escutcheons, Bell Pulls, Etc.
PLATED AND BRONZE
Butts, Flaps and Knobs for Inside Blinds,
Plated and Bronze Sash Lifts,
And all Articles necessary for first-class Residences and Public Buildings.

AGENCY AND DEPOT OF THE

Trenton Lock Co.

WHISTLE MOUTH-PIECE.



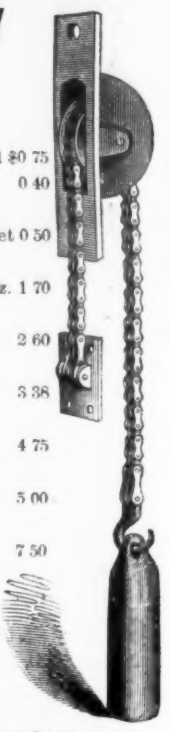


CHAIN AND PULLEY

FOR

Heavy Sash

Copper Sash Chain	per yard	$0 75
Zinc Sash Chain	"	0 40
Hooks and Plates (2 Hooks and 2 Plates)	per set	0 50
Square Groove Noiseless Pulleys, 2 inch	per doz.	1 70
Square Groove Noiseless Pulleys, 2½ inch	"	2 60
Square Groove Noiseless Pulleys, 3 inch	"	3 38
Square Groove Noiseless Pulleys, 3½ inch	"	4 75
Square Groove Brass Face and Wheel Pulleys, 2 inch	"	5 00
Square Groove Brass Face and Wheel Pulleys, 2½ inch	"	7 50

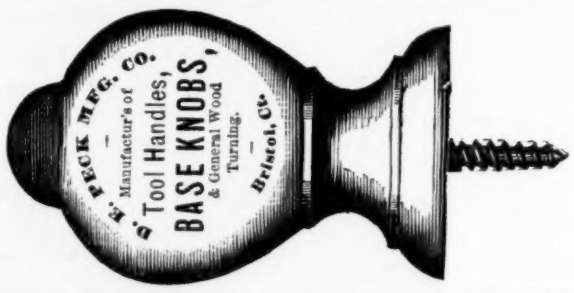


The Trenton Lock Company's Patent Reversible Rim and Mortise Locks.

The attention of Owners, Architects and Builders is requested to the construction of these Locks, which are excelled by none, either in simplicity strength or durability.

The combination of the Patent Lever and Spring renders the movement of the Latch the easiest and quickest in use.

The tails of the Bolts and Latches, being of corrugated wrought iron, are stronger than those made in any other manner. The general finish of the goods is fully equal to the best in market.

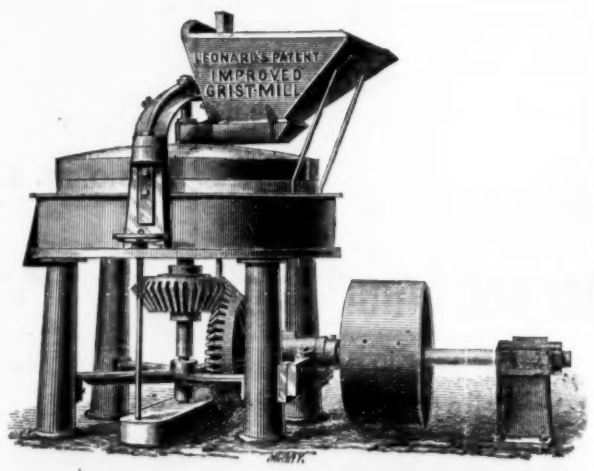


Entered according to Act of Congress, in the year 1874, by H. S. Bartholomew, in the Office of the Librarian of Congress, at Washington.

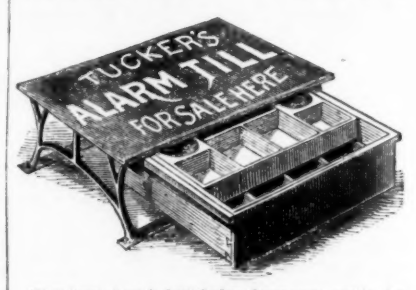
PATENTED, JANUARY 27, 1874.

Braces, Curry Combs,
Ash Shovels, Ferrules, Chisel Rings,
Garden Trowels, Pat. Ox Bow Pins, &c
Manufactured by
G. W. & H. S. Bartholomew, Bristol, Conn.

Burr Stone Flouring & Grist Mills,
LEONARD & SILLIMAN, Manufacturers,
BRIDGEPORT, CONN.
Send for Illustrated Catalogue and Price List.



TUCKER'S
Alarm Tills.



Will furnish with first Order above case, gratis, for Sample Room. Send for price list to the Trade.

TUCKER & DORSEY, Manufacturers
Indianapolis, Ind.

Schweitzer Mfg. Co.,

57 Reade Street, New York.

CONTINENTAL LOCKS.

Made of Wrought Iron or Brass, very superior in quality, and only an auger used in mortising.

SCHWEITZER PAD LOCKS,
EXCELSIOR COMPASSES.
EXCELSIOR DIVIDERS,
WITH
STUBS' STEEL POINTS.

Best and Cheapest Goods in the market. Sole Agents for the United States for

NEWBOULD'S FILES AND TOOLS
French Coffee Mills.
NOBLE MFG. CO., Tools, Ship Augers, &c.
Emery, Waterhouse & Co., Shovels & Spades

We also make a superior
AXE. { *"Queen of the Forest,"* / *"Wood Chopper's Pride,"* &c.
Disston's Saws. (Largest Stock in the City).
General dealers in
FOREIGN & DOMESTIC HARDWARE.

PHILADELPHIA.

(Corrected weekly by Lloyd, Supplee & Walton).

Terms, 30 days. For 60 or 90 days, interest added at 10 per cent. per annum.

Anvils.—Solid Cast Steel.....₱ ℔ 14c
Peter Wright's.....₱ ℔, gold, 12½c
Wilkinson's.....11½c
Eagle.....11 cents currency—dis 15 @ 15&5 %
Apple Parers.—Reading Improved.....per doz $8 50
Victor, Improved.....“ 8 25
Union, “ “ 8 00
Turn Table, “ “ 8 50
Discount for 25 dozen lots.....50c
Axes.—Mann's Light.....Per doz. $13 00 @ 14 00
Hunt's Light.....“ 14 00 @ 14 50
Red Indian, all sizes.....“ 12 50 @ 12 00
Red Chieftain, all sizes.....“ 12 50 @ 13 00
Crown Prince.....“ 13 50 @ 13 00
Augers and Auger Bits.—Pierce's Pat. Twist Bits.....dis 25 %
Bates' & Ives' Bits.....dis 30&10 %
Douglass' Bits.....dis 30&10 %
Hamden Auger Bits.....dis 30&10 %
Cook s Bits.....dis 40 %
Bonney's Pat. Hollow Augers.....dis 25 %
Stearn's Patent Hollow Augers.....dis 25 %
Russell Jennings' Bits.....dis 10 %
Bates' & Ives Nut Augers.....dis 30&10 %
Douglass Nut Augers.....dis 30&10 %
Watrous' Shn Augers.....dis 10 %
Balances.—Landers Frary & Clark's.....dis 15 %
Chattillon's.....dis 15 %
Morton's.....dis 15 %
Common Spring, with Hook.....₱ doz $1 28 @ 2 00
Bells.—Bevin Bros. Mfg Co. Full Weight Hand Bells.....dis 50&10 @ 60 %
Bevin Bros. Mfg. Co., Extra Light Hand Bells.....dis 60 @ 60&10 %
Other makers light.....dis 60&10 %
Connell's Door Bells.....dis 50 %
Great Western and Kentucky, Cow.....dis 50&10 %
Boring Machines.—Bates' Mfg. Co., complete with augers.....dis 15 @ 20 %
Douglas' Mfg. Co., complete with augers..dis 15 @ 20 %
Common Boring Machines, no Augers.....$4 25 @ 4 00
Anguar. “ “ “ 5 25 @ 5 00
Bolts.—Eastern Carriage Bolts.....dis 70&10 %
Western “ “ “ dis 70&10 %
Philadelphia “ “ “ dis 50&10 %
Wrought Snutter Bolts.....dis 45 @ 50 %
Cast “ “ “ dis 30&10 %
Skelly's Phila. Norway iron, finish. points....dis 30&5 %
Braces.—Barber s.....dis 40 %
Backus.....dis 40&10 %
Bartholonew's American Ball.....dis 10&10 %
Spofford.....dis 40 %
Butts.—Cast Fast Joint, Narrow.....dis 50 %
“ “ Broad.....dis 50 %
Cast Loose Joint.....dis 60 %
“ Acorn, Loose Pin.....dis 45 %
Wrought Loose Pin.....dis 35 %
“ Table Hinges and Back Flaps.....dis 30 %
“ Narrow.....dis 30 %
“ Loose Joint.....dis 35 %
“ Reversible.....dis 35 %
Parker's Blind Butts.....
Shepard's “ “ .....dis 45 %
Clark's “ “ .....dis by the case 50 %
Garretson's “ “ .....
Lull & Porter's “ “ .....
Cherritree Blind Butts for wood.....dis 50 %
Chains.—German Halter.....new gold list dis 10 %
“ Coil.....new gold list dis 10 %
Galvanized Pump.....₱ ℔ 15c
Best Proof Coil Chain—

₱ ℔.....	13¾	10¾	10	9½	9¼	9	8¾c gold
	3-16	¼	5-16	⅜	7-16	½	⅝ in.

By the cask, 560 lbs., discount ½c per lb. Common Chain, ½c per lb. less than proof.
Chisels.—Socket Framing.....dis 60 @ 60&10 %
Socket Firmer.....dis 60 @ 60&10 %
Tang “ “ .....dis 40 @ 40&10 %
Beatty's Framing and Firmer.....dis 10 @ 15 %
Casters.—Porcelain Wheel.....dis 25&10 %
Iron.....dis 25&10 %
Brass.....dis 25&10 %
Clothes Wringers.—Universal.....per doz $72 00
Novelty.....“ 72 00
Reliance.....“ 72 00
Providence.....“ 12 00
Orders for 5 dozen, discount $5 per dozen.
King Wringers (Iron Frame).....per doz $68 00
Coffee Mills.—Common Box and Side.....dis 10 @ 15 %
Patent Box and Side.....dis 10 @ 15 %
Cutlery.—American Pocket (best).....dis 25 %
Landers, Frary & Clark, J. Russell & Co. and Lamson & Goodnow Mfg. Co. Manufacturers' net prices.
Drawing Knives.—Hart Mfg. Co. s ..dis 60 @ 60&10 %
Concave Adjustable Handle.....dis 10 %
Beatty.....dis 10 @ 15 %
Fry Pans.
Tinned.....dis 20 %

₱ doz..	$3 00	3 25	3 62	4 00	4 50	5 00	5 50	6 00	7 50
No....	0	1	2	3	4	5	6	7	8

Burnished.....

₱ doz..	$2 80	3 00	3 38	3 75	4 12	4 50	5 00	5 62	6 25
No....	0	1	2	3	4	5	6	7	8

Files.
Nicholson Mill Files.... new list, $5 00 to £ cur dis 10 %
“ Bastard..... “ 5 00 to £ cur dis 10 %
“ Taper..... “ 5 00 to £ cur dis 10 %
Butcher's Mill.....$5 75 to £ gold
“ Bastard.....5 50 to £ gold
“ Taper.....5 50 to £ gold
Moss & Gamble—Mill, Taper and Bastard.....5 50 @ 5 25 to £ gold
Fluting Machines.
Royal, No. 1, 4½ inch Rollers.....list $6 00
“ No. 2, 6 “ “ .....list 7 00
K. F. M.—4½ in. rolls.....5 00
“ —6 in. rolls.....6 00
Hammers.
Yerkes & Plumb's.....dis 10 @ 15 %
Hammond & Son's.....dis 5 %
Verce.....dis 5 %
Hatchets.
Beatty's.....dis 10 @ 15 %

Shingling and Half.	₱ doz..	$7 00	7 50	7 75	8 00
	No.....	1	2	3	

Yerkes & Plumb.....dis 10 %

Shingling and Half.	₱ doz..	$7 00	7 50	8 00	8 50
	No.....	1	2	3	4

Claw.....

	₱ doz.....	$7 50	8 00	
	No.....	1	2	3

Hinges.—Strap and T, advanced Feb. 6.....dis 25&7½ %
Bonney's No. 1 Gate.....dis 25 %
“ No. 2 and 3.....dis 35 %

Horse Nails.	Nos.	6	7	8	9	10
Ausable.....		27	25	24	23	22
Globe.....		28	26	25	24	23
Brundage.....		26	24	23	22	21
	Nos.	5	6	7	8	9	10
Putnam.....		32	28	26	25	24	23

On Ausable, Globe and Brundage 1000 ℔ lots.....dis 5 %
Knobs.—Door, Mortise and Trim.
Makes in Combination.....new list dis 45 %
Extra discount for cash 2 %
Porcelain and Mineral.....dis 20 %
Locks and Latches.—Rim and Mortise.....dis 45 %
Extra discount for cash 2 %
Till and Cupboard.....dis 25 %
American Padlocks.....dis 50 %
Scandinavian Pad Locks.

₱ doz.....	$10 50	10 50	12 00	12 00	13 00	15 00	dis 15 %
No.....	9	9½	10	10½	11	11½	
₱ doz.....	$13 00	13 00	18 00	24 00	22 00		
No.....	12	12½	13	13½			dis 15 %

Trunk Locks.....dis 5 @ 10 %
Thumb and Boggeus Latches.....dis 25 %
Lanterns.—Square Candle and Oil.....dis 10 %
Globe for Oil.....dis 10 %
“ “ Kerosene.....dis 10 %
Tubular Lanterns.....dis 10 %
Mortising, Boring and Short Cutter.....dis 25 %
Western Pattern.....dis 25 %
Pennsylvania Pattern.....dis 15 %
Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets.....dis 20 %
Stebbins' Gates.....dis 60 @ 60&10 %
Lincoln's “ .....dis 40 @ 40&10 %
Landers, Frary & Clark's Petroleum...dis 10 @ 10&10 %
Taylor's Petroleum Faucets.....dis 20 @ 20&10 %
Brass Liquor Cocks.....dis 20&10 %
Meat Cutters.—Dixon's.....dis 10 %
Woodruff.....dis 10 %
Stowe.s.....dis 10 %
Hale's.....dis 25 %
Stuffers.....dis 10 %
Planes.—Auburn Tool Co., “ Bench ”.....dis 30 %
Taber Plane Co., “Bench”.....dis 30&10 %
Metallic Plane Co.....dis 25&5 %
Evans Pat. Circular.....net
Plane Irons.—American.....list net
Butcher's.....gold £, $5 50
Picks.—Philadelphia.....net
Pittsburgh.....net
Plumb and Levels.
Stanley Rule and Level Co.....dis 60 @ 60&10 %
Wm. Johnson, (Stanley List).....dis 60 @ 60&10 %
Rakes.—Cast Steel Garden.....dis 33⅓ %
Malleable Garden.....dis 33⅓ %
Wood Head Iron Teeth.....dis 30 @ 40 %
Rules.—Stanley Rule and Level Co.... dis 60 @ 60&10 %
Steven's and Hubbard's.....dis 60 @ 60&10 %
Steelyards.—American Pattern.....dis 15 %

₱ dox.....	$5 50	7 00	9 00	9 00	11 00	12 00
No.....	50	100	150	200	250	300

English Pattern.....dis 15 %

₱ doz.....	$7 00	8 67	10 67	12 67	14 67	16 67
No.....	50	100	150	200	250	300

L. F. & C. Excelsior.....dis 10 %

₱ doz.....	$9 00	10 00	12 00	15 00	18 00	21 00
No.....	50	100	150	200	250	300

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened.....₱ doz. $11 00 net
Clipper No. 10, Boxed and Sharpened.....₱ doz $10 50
“ “ “ “ 10 00
Common Scythes.....₱ doz $7 00 @ 10 00
Squares.—Steel and Iron, new list.....dis 50 %
Saws.—Disston's Cross Cut.....dis 12½ %
Disston's Hand.....dis 12½ %
W. McNiece's Hd. Cross-Cut & Circ'r, new list..dis 15 %
Boynton's Lightning, new list.....dis 30 %
Shovels and Spades.
Rowland's Plain Back, list Feb. 1878.....dis 20&10 %
“ Back Strap “ .....dis 20&10 %
Oliver Ames & Sons.....new list dis 12½ %
Brady Shovel Co.....dis 12½&5 %
Sad Irons.—Richmond (polished face).....per lb. 4½c.
Coquanock (polished face).....“ 4½c.
Stone.—Arkansas Oil, No. 1.....₱ ℔ $1 38
Turkey Oil, No. 1.....“ 1 00
Washita Extra.....“ 30c
No. 1.....“ 22c
M “ 2.....“ 18c
Hindostan 8 in.....“ 5½c
“ Axe.....“ 7c
Screws.—Iron.....new list, Jan. 1st, 1874, dis 82½ %
Brass.....dis 5½ %
Spoons.—
Plated Spoons, Rogers Bros.'...new list dis 30 @ 30&5 %
Britannia. Spoons.....dis 40 @ 40&5 %
German Silver.....new list dis 10 @ 15 %
“ Light.....new list dis 15&5 %
Lalance & Grosjean Iron.....dis 10 %
Springs.—Gray's Door.....dis 40 %
Torry's Door.....dis 40 %
Stocks and Dies......dis 15 %
Stove Polish.—Gem.....₱ gross, $5 00
Onyx.....“ $5 00
Try Squares.—Winterbottom.....dis 10 @ 15 %
Stanley Rule and Level Co.....dis 45&10 %
Willis Thrall, No. 2.....dis 30&10 %
Disston's No. 2.....dis 40 %
Tacks, &c.—Half Weight Tacks.....dis 70 %
“ “ “ by the case.....dis 70&7½ %
Clout and Finishing Nails.....7½ %
“ “ “ by the case.....dis 7½ %
Traps.—Genuine Oneida—Newhouse list.....dis 20 %
Imitation “ “ “ .....dis 30 %
Vises.—Solid Box.....₱ ℔ net 15c
Wrenches.—Coes Genuine.....dis 40 %
Coes Imitation Wrought Bar.....dis 50 %
“ “ Malleable Bar.....dis 60 %
“ “ (Kellogg) Malleable Bar.....dis 50 @ 10 %
Tafts Pattern (Wrought Bar).....60 %
“ “ Kellogg's (Nail Bar).....dis 60&10 %
Philadelphia Tool Co.'s Pat. Duplex.....dis 25 %
“ “ “ Improved Baxter.....dis 25 %
“ “ “ Adjustable Fork.....dis 25 %
Wire.—No. 0 to 18.....dis 25 @ 37½ %
No. 19 to 26.....dis 40 @ 42½ %
No. 27 to 36.....dis 45 @ 47½ %
Coppered 0 to 12.....dis 15 @ 20 %
Tinned Broom Wire.....dis 20 %

BUFFALO.

Reported by Messrs. Sidney Shepard & Co.

April 11, 1874.

Augers—C. S. Cut, French, Swift & Co.....dis 30&10 %
Bits, Auger—Pierce s.....dis 30 %
Snell Mfg. Co.....dis 20 %
Jennings.....dis 10 %
Bells, Cow—Yaw's Genuine.....dis 25 %
Bolts—Carriage and Tire.....dis 75 %
Braces—Hit, Spofford's Patent.....dis 40 %
Brads, Cut.....dis 50&7½ %
Boards—Stove, Brooks' Patent.....dis 30 %
Butts—Brass.....dis 25 %
Cast Loose Joint.....dis 60 %
“ “ Pin.....dis 45 %
“ “ “ Japanned.....dis 45 %
“ “ “ Silver Tipped.....dis 25 %
Wrought Narrow.....dis 30 %
“ Broad, Loose Joint.....dis 35 %
“ Table and Back Flaps.....dis 30 %
Wrought Butts, Loose Pin.....dis 35 %
Belting—Rubber.....dis 30 @ 30&5 %
Leather new list.....dis 30 @ 30&5 %
Beaters, Egg, “ Peerless”.....per doz $4 00
Brick—Bath (box of 2 doz) Best English.....$1 50
“ Rutherford”.....$1 00
Chalk—White, Carpenter's.....₱ gross, 50c
Red, Carpenter's.....“ 75c
Blue, “ .....“ 90c
Chisels—Firmer Socket.....dis 60&10 %
Framing Socket.....dis 60&10 %
Corner Socket Chisels.....dis 60&10 %
Slick's Carpenters'.....dis 60&10 %
Castings—Malleable.....₱ ℔ 10½c
Cherry Seeders.....per doz $12 00
Elbows—Corrugated.....

	5	5½	6	7	
Charcoal.....	$4 25	5 25	5 25	6 50	dis 10 %
Russia.....	10 00	13 00	13 00	14 00	

Files—Maischoss Bros.....dis 50 %
Freezers Ice Cream—“ Champion .....dis 33⅓ %
Hinges—Window Blind—
Clark's No. 20.....55&10 %
Shepard's Standard, and Clark s.....dis 50 %
Wrought Strap and T.....dis 55&7½ %
Hods, Coal—Plain, Black and Galvanized.....dis 10 %
Funnel, Black and Galvanized.....dis 10 %
Fancy and Helmet.....dis 10 %
Palace Coal Vases.....net
Hooks and Staples—Wrought.....dis 60&10 %
Hooks—Belt.....dis 50 %
Hasps and Staples—Wrought.....dis 60&10 %
Sad Irons.....4½c
Kettles—Brass.....₱ ℔ 50 @ 53c
Enameled.....dis 45 %
Knives, Drawing—Oval No. 1.....dis 60&10 %
Razor Blade.....dis 50&10 %
Lanterns “ Peerless,”.....No. 1 5 10
₱ doz $26 00 $11 25 $13 75 dis 10 %
Gem, with guards.....$6 50
Tubular.....11 50
“ with Guards.....12 00
Machines—Apple Paring, “Turn Table”.....8 50 ₱ doz
Mills, Coffee—Box and Slide, common.....dis 10 %
Box Union and Eagle.....dis 10 %
“ American.....dis 20 %
Nails—Clout and Finishing.....dis 7½ %
Shoe.....dis 7½ %
Horse, Ausable.....No. 5 6 7 8 9 10
20 27 25 24 23 22c
“ “ Finished & Pointed.....add 1c ₱ ℔
“ “ 1000 lbs.....dis 5 %
“ Clinton.....No. 6 7 8 9 10
22 20 19 18 17c
Packing—Rubber.....dis 30 @ 30&5 %
Pencils, Slate—Soapstone.....4 5 6in.
30 40 50c. ₱ 100
Case lots.....dis 20 %
Paint—White Lead, U. S. Gov't.....₱ ℔ 9 c
Rivets—Iron, Black and Tinned.....dis 20 @ 25 %
Copper.....dis 10 %
Rope—Manila, ¾ inch and larger.....₱ ℔ 16½c
Rules—Boxwood and Ivory, Stephens.....dis 60 %
Screws—“American Screw Co”—
Flat Head, Iron.....dis 82½ %
Flat Head, Brass.....dis 82½ %
Staples—Blind, Boardman s Pat., ¼ & ⅜.....₱ ℔ 37c
Spoons, Iron Tinned.....dis 10 %
“ by the case.....dis 20 %
Plated Rogers' A No. 1.....dis 30&5 %
Britannia.....dis 40 %
Squares—Steel and Iron.....new list 50 %
Shoes, Horse—H. Burden & Sons.....₱ keg $6 00
Shovels & Spades—Shenard, Forsyth & Dennison. dis 20 %
Saws—Henry Disston & Sons.....dis 10 %
Scales—Buffalo Scale Works.....dis 25 %
Fairbanks.....dis 15 %
Shears—Seymour's.....dis 60 %
Traps, Steel—Newhouse.....dis 20 %
Tacks—Half Weight Am. Iron.....dis 70&7½ %
Vises—Parallel, Buffalo.....dis 20 %
Wrenches—Coes' genuine.....dis 40 %
Coes' Imitation.....dis 50&10 %
Tafts' Pattern.....dis 55&10 %
Ware—French, Tinned and Iron.....dis 30
Stamped and Japanned.....net
Cast Iron Hollow.....dis 30 %
Tin Plates.—Add for each X.....2 50
10x14, IC. Charcoal...$12 50 | 14x20 C. terne...11 50 @ 11 75
12x12. “ ... 10 00 | 20x28 C. “ ... 25 00
12½x17, “ ... 12 00 | 20x28 X. “ ... 29 25
14x20. “ ... 13 50 |
Pig Tin—Straits.....33c @ 34c
Bar Tin.....35c
Solder.....No. 1, 19c ; No. 2, 17c
Sheet Zinc—
“ Lasalle ”.....570 ℔ casks $10 00 | 100 ℔ casks 10 50 ₱ 100 ℔s
Sheets.....$10 00
Iron Wire—Bright and Annealed.....dis 35 %
Coppered.....dis 30 %
Tinned.....dis 15 %
Tinned Broom, Nos. 20 21 22 dis 20 %
20c 21c 21c
Copper—Sheathing 14 @ 18 oz.....₱ ℔ 33c
Planished.....₱ ℔ 39 @ 41c
Bottoms.....₱ ℔ 35c
Bolts.....₱ ℔ 35c
Brazers' Sheets.....₱ ℔ 37c
Sheet Iron.—
18 Common.....$5 10
24 Common.....5 30
24 W. D. Wood & Co., Smooth Finish.....6 10
Am. Russia.....A. B.
Gen. Russia, No. 1 stained.....14½c 11c
“ “ clean.....20c
Galvanized.....21c
.....dis 15 %

CINCINNATI.

Reported by Sellers & Co., Importers and Jobbers Metals, No. 214, 216 and 218 Main street.

Tin Plate.—I. C. 10x14 Charcoal.....$12 00 @ 14 00
I. X. 10x14 Charcoal.....15 50 @ 17 00
I. C. Terne 14x20.....11 00 @ 12 00
I. C. Terne 20x28.....24 00 @ 26 00
I. C. Continuous.....26 00
Block Tin.—Pigs.....37½c @ 38c | Bars.....₱ ℔ 39c
Solder.—
S. & Co.....₱ ℔ 20c | A 1.....₱ ℔ 24c
Lead.—Pig..₱ ℔ 5½c @ 6c. | Roofing “ 22c
Bar.....₱ ℔ 8c @ 9c

Copper.—
Ingot.....₱ ℔ —
Planished... “ @ 40c
Sheathing... “ @ 37c
Copper Drops 37c @ 38c
Zinc. Cast, 500 to 1000 lbs.....₱ ℔ 11 c
Case, 100 lbs.....“ 11½c
Slab.....“ 8½c @ 9c
Brass.—
Roll, No. 6 to 30, ₱ ℔ 43c
“ 30 to 38. “ 65c
Babbit Metal.—
Sellew & Co.....₱ ℔ 35c
Antimony.....₱ ℔ 20c
Bismuth.....₱ ℔ $6 00
Nickel.....₱ ℔ $3 00
Sheet Iron.—
Russia.....₱ ℔ 20c @ 22c

	Com. B.	Fin. S. I. U.	Smooth D Re'fd.
15 to 20.....	6·0c	7·5c	9·0c
22 to 24.....	6·2c	7·7c	9·2c
26.....	6·4c	8·0c	9·4c
27.....	6·6c	8·2c	9·6c

Galvanized Iron.—Full bundles.....dis 25 %

Nos. 18 to 20.....	15c	No. 27.....	18c
22 to 24.....	16c	28.....	20c
25 to 26.....	17c		

Bar Steel.—Silver, ₱ ℔ 21c ; Crescent, 17½c.
Iron Wire.....dis 35 %
Enameled Ware.....dis 33⅓ %
One Piece Corrugated Elbows.....dis 10 %
Iron Gas Pipe.....dis 65 %

Charcoal Iron.		Russia Iron.	
4¼ inch.....	₱ doz $3 75	4½ inch.....	₱ doz $8 00
5 “	“ 4 25	5 “	“ 10 00
5½ “	“ 5 25	5½ “	“ 13 00
6 “	“ 5 25	6 “	“ 15 00
		7 “	“ 14 00

Leader Elbows—Flue Crimp Retinned.—

	₱ doz.		₱ doz.
2-inch.....	$2 00	2½-inch.....	$2 25
3-inch.....	2 50	3½-inch.....	3 00
4-inch.....	3 50	4½-inch.....	4 00

Sheet Iron Bread Pans.....₱ ℔ 12c
American Broilers.....₱ doz. $13 50
Timmen's Machines.....Net list
Sad Irons.....₱ ℔, 5½c
Brass Kettles.—Ansonia.....48c

DETROIT.

(Reported by Messrs. Jewett & Root.)

Tin Plate.—Best Charcoal

IC, 10x14.....	$13 00
IX, 10x14.....	15 75
XX, 10x14.....	18 50
IC, 12x12.....	13 00
IX, 12x12.....	16 25
IC, 14x20.....	14 00
IX, 14x20.....	16 75
XX, 14x20.....	19 50
XXX, 14x20.....	22 75
XXXX, 14x20.....	26 00
DC, 100 Plate.....	12 50
DX, “	15 25
DXX, “	18 00
DXXX “	20 75
DXXXX 100 Plate..	23 50
IX, 14x14.....	25 00
IC, 10x14 W.....	14 50
IX, 10x14 W.....	15 25

Roofing Tin.—Best Char.

IC, Terne, 14x20.....	$12 25
IX, “ 14x20.....	15 00
IC, Terne, 20x28.....	26 00
IX, “ 20x28.....	30 50

Coke Tin.—

IC, 10x14, Coke.....	$11 00
IX, 10x14, Coke.....	14 75
IC, 14x20, “	12 00

Sheet Zinc.—Any width.....10 c

Copper —

Sheathing.....	38c
Copper Bottoms....	36c

Planished Copper.—

Sheathing, 14x48.....	41
Boiler Size, No. 7....	43c
“ “ No. 8....	33
“ “ No. 9	43c

Pig Tin.—Large Pigs.. 35c
Small Pigs..... 36c
Bars..... 37c
Solder.—No. 1..... 18
No. 2..... 20
Bright Wire.....dis 35 %
Sheet Iron.—
No. 18 Am. Com.... 5 50
No. 24 Am. Com.... 5 50
Pat. Am. Russia “A,
Nos. 24, 25 & 26..... c
Pat. Planished Russia.. c
Russia No. 9, 10, 11 & 12... c
W. D. WOOD'S & CO.'S SHEET IRON.—
Nos. 15 to 20 Smooth $6 10
“ 21 to 24..... 6 34
“ 25 & 26..... 6 50
“ 21 to 24 Char'l.. 7 80
“ 25 & 26 “ .. 8 00

LIST OF HARDWARE DEALERS.

Having compiled a complete list of the **Hardware Dealers** in the United States, expressly for addressing circulars, I am prepared to receive orders for addressing **ENVELOPES, CIRCULARS, &c.** The printed address is cut from the list and stamped upon the envelope or wrapper, thus enabling me to address a great number in a short space of time, and at rates far below the prices usually paid for this work. It answers all purposes, and can be done for one-third the expense of addressing by hand. My list contains names of over 4000 dealers, each State, city and town therein, being compiled separately. In making it up great care has been taken to strike out all whose commercial rating is questionable, and to make it as perfect as possible. Changes are continually being made, and it is my intention to keep pace with them as far as possible. Wholesale Dealers and Manufacturing Co.'s whose custom it is to send out circulars, price lists, &c., to the trade throughout the States, cannot fail to find my list, and style of addressing, a great advantage to them, as it is a great saving of both time and expense. It has been tried by a large number in the trade, some of whose names appear at the bottom or this circular, and to any of whom I would most respectfully refer. My rate for addressing is $2 50 per M. Envelopes, &c., sent to the address below, will receive prompt attention, and will be addressed and returned at once, or envelopes, &c., will be furnished at market prices. For further information, address,

CHAS. B. SMITH, No. 115 Broad St., N. Y.

REFERENCES.

Union Nut Co., 78 Beekman St., L. Boardman & Son, 82 Chambers St., Millers Falls Co., 79 Beekman St., E. M. Boynton, 80 Beekman St., Yale Lock Mfg. Co., N. Y.

P. S.—Copies of my list will be forwarded to any address throughout the U. S. upon receipt of $2 50.

NEW YORK, February 1874.

Steel.

THREE CLASS PRIZE MEDALS. CLASSES 1, 21, 22, Great Exhibition of Industry, LONDON, 1851.

MEDAL OF HONOUR, SOCIETY OF ARTS & INDUSTRY, LONDON, 1856.

1st CLASS PRIZE MEDAL, CLASS 1ª UNIVERSAL EXHIBITION OF INDUSTRY PARIS, 1855.

COCKER BROTHERS,

SUCCESSORS TO

SAMᴸ COCKER & SON,

(Established 1752.)

SHEFFIELD, ENGLAND

MANUFACTURERS OF

CAST, [illegible], SHEET, AND BLISTER STEEL, OF EVERY DESCRIPTION.
BEST CAST STEEL WIRE, ADAPTED SPECIALLY FOR MECHANICAL PURPOSES;
Also for ROPES, NEEDLES, FISH HOOKS, PINS, CRINOLINE, &c.

BEST CAST STEEL FILES, SAWS, EDGE TOOLS,
HACKLES, GILLS, CARD CLOTHING, CARD TEETH, HACKLE AND GILL PINS,
FISH HOOKS, NEEDLES. &c.

ALSO

GENERAL MERCHANTS.

Agent, JONATHAN HATTERSLEY, Cincinnati, O.

WM. JESSOP & SONS,

MANUFACTURERS OF

STEEL,

AND IMPORTERS OF IRON

SHEFFIELD, ENGLAND.

PRINCIPAL DEPOTS:

NEW YORK, Nos. 91 and 93 John Street.....BOSTON, No. 141 Federal.
ST. LOUIS, No. 714 North Second Street.

AGENCIES:

PHILADELPHIA, Jas. C. Hand & Co.....PROVIDENCE, Nightingale & Kilton.
CHICAGO, Crerar, Adams & Co.....NEW ORLEANS, Folger & Co.
CINCINNATI, Augustus Wessel.....SAN FRANCISCO, Huntington, Hopkins & Co.

F. W. MOSS,

Successor to **JOSHUA MOSS & GAMBLE BROS.**

FRANKLIN WORKS, WADSLEY BRIDGE WORKS, WALKLEY WORKS, } SHEFFIELD, ENGLAND.

MANUFACTURER AND IMPORTER OF

STEEL AND FILES.

Principal Depots: 80 John St., N. Y., and 512 Commerce St., Phila.

MOSS & GAMBLE **SUPERIOR C. S. "FULL WEIGHT" FILES,**

Cast Steel Hammers and Sledges. Also, "M. & G." Anvils and Vises.

WARRANTED CAST STEEL, especially adapted for DIES and TURNING TOOLS, DRILLS, COLD CHISELS, PUNCHES and all kinds of MACHINISTS' TOOLS.
Celebrated Improved Mild Centre Cast Steel, for Taps, Reamers, and Milling Tools, warranted not to crack in hardening Taps of any size.
Swede Spring Steel, especially adapted to Locomotive and Railway Car Springs.
English Spring and Plow Plate Steel. Also, manufacturer of

Sheet Cast Steel, Shear, German, Round Machinery, Hammer, Fork and Shovel Steel

And GENERAL MERCHANT.

A. M. F. WATSON, General Agent.

WILSON HAWKSWORTH, ELLISON & CO.,

MANUFACTURERS OF

STEEL, STEEL WIRE, &C.,

AND GENERAL MERCHANTS,

CARLISLE WORKS, SHEFFIELD, ENGLAND.

AGENCIES:

New York, 72 John Street.
Philadelphia, 505 Commerce Street.
Boston, 21 Oliver Street.
New Orleans, La., 111 Gravier St.

BARROW HÆMATITE STEEL COMPANY,

LIMITED.

BARROW IN FURNESS,

LANCASHIRE, ENGLAND.

MANUFACTURERS OF

Steel Rails, Tyres, Wheels,

Axles, Shafting, Boiler & Ship Plates, Bessemer Pig Iron, etc., etc.

CHAS. CONGREVE & SON,

Sole Agents for the United States,
104 & 106 John Street, opposite Cliff Street, NEW YORK.

J. & RILEY CARR,

MANUFACTURERS OF SUPERIOR

STEEL

For Tools, Cutlery, Saws, Files, Augers, Gimblets, &c.; Sheet Cast Steel for SPRINGS AND STAMPING COLD;

ALSO THE CELEBRATED

DOG BRAND FILES,

Unsurpassed, if equaled in quality.

Bailey Lane Works, Sheffield, England.
Warehouse 82 [illegible]hn St., New York.
Established 1810.

HENRY MOORE, Attorney.

Steel.

SANDERSON BROTHERS & COMPANY,

(LIMITED)

MANUFACTURERS OF THE

CELEBRATED CAST STEEL,

Warranted Most Superior for Tools and Granite Rock Drills.

DARNALL WORKS, ATTERCLIFFE FORGE, WEST STREET WORKS, } SHEFFIELD, ENGLAND.

IMPORTERS OF FILES,

AND

AGENTS FOR ARMITAGE'S GENUINE MOUSEHOLE ANVILS.

NEW YORK, Edward Frith, 16 Cliff.
BOSTON, H. L. Richards, 18 Batterymarch.
PHILADELPHIA, Wm. H. Sowers.
CLEVELAND, O., Cleveland, Brown & Co.
NEW ORLEANS, Rich'd Rhodes, 71 Camp.
BALTIMORE, Md., Wm. H. Cole.
MONTREAL, Saint Paul St.
NEW HAVEN, Ct., Atwater, Wheeler & Co.

FRANCIS HOBSON & SON,

97 John Street, NEW YORK,

Sole Manufact'rs of **"CHOICE"** Extra Cast Steel.

Manufacturers of all Descriptions of Steel.
Manufacturers of Every Kind of Steel Wire.

Don Works, Sheffield, England.

JOHN HOGAN, Agent.

S. & C. WARDLOW,

MANUFACTURERS OF THE CELEBRATED

Cast and Double Shear

STEEL,

In Bars, Sheets and Coils, for fine Pen and Pocket Cutlery, Table, Carving, Butcher and Shoe Knives, Turning Tools, Dies, Files, Clock or other Springs, Saws and Tools of every variety.

SHEFFIELD, ENGLAND.

Office of S. & C. WARDLOW, 13 Gold Street, New York.

In calling the attention of consumers of Steel in any of the varieties above enumerated, we would respectfully assure them of our ability to supply an article that cannot be excelled in quality, temper, and adaptation in all respects to the various purposes for which it may be required. Half a century of practical experience in all departments of Steel manufacture, a long established reputation in England, and the Continent of Europe, and in the Eastern States principally of this Country, encourage us to solicit a universal trial of our Steel for the above or other purposes for which a first class material in quality, temper, and durability is needed.

G. SANDERSON & CO.,

Manufacturers of all descriptions of

STEEL.

Bailey Street and Broad Lane Steel Works, } SHEFFIELD, ENGLAND.

Particular attention is paid to quality and temper for

Files, Saws, Table and Pocket Cutlery, Augers, Shovels, &c.

ALSO STEEL of superior quality for **Turning Tools, Taps, Dies, Drills,** &c.

Hot and Cold Rolled Sheets for Clock Springs, Corset Clasps, Pens, &c.

☞ ***Makers of the Celebrated ROCK BORING DRILL STEEL.***

Warehouse, 57 John Street, New York.

JOHN A. GRISWOLD & CO.,

Troy, N. Y.,

Office in New York City, 56 BROADWAY.

MANUFACTURERS OF

Bessemer Railway Steel,

MERCHANT BARS, TIRE AND SHAFTING,

Railroad Iron, Pig Iron, Merchant and Ship Iron,

AGENCIES IN BOSTON AND PHILADELPHIA.

D. G. GAUTIER & CO.,

MANUFACTURERS OF

Hammered and Rolled STEEL of every description

JERSEY CITY, NEW JERSEY.

DUDLEY G. GAUTIER. JOSIAH H. GAUTIER.

CHROME STEEL COMPANY,

MANUFACTURERS OF

CHROME CAST STEEL,

WARRANTED SUPERIOR TO ANY STEEL IN THE MARKET—EITHER ENGLISH OR AMERICAN—FOR EVERY PURPOSE.

Works and Offices—Kent Avenue and Keap Street, Brooklyn, E. D., N. Y.

Principal Agencies:

Hall, Kimbark & Co., Chicago, Ills. **Harris, Rice & Co.,** St. Louis, Mo. **Horace P. Tobey,** Boston, Mass **Cleveland, Brown & Co.,** Cleveland, Ohio. **Wood & Leggat,** Hamilton, Ont.

Steel.

Sheffield Steel Works.

(Established in 1848.)

SINGER, NIMICK & CO.

Pittsburgh, Pa.,

Manufacturers of **Extra Quality Tool**

CAST STEEL,

Patent Rolled

SAW PLATES,

All descriptions of **Cast and German**

Spring and Plow Steel,

Elliptic and Side Springs, Seat Springs,

AXLES, STEEL TIRE,

Plow Wings, Shares, Cultivators,

Reaper Bars, Mower Bars, &c., &c.

Warehouse, 83 Water and 100 First Streets.

ISAAC JENKS & SONS,

Minerva & Beaver Iron & Steel Works

Wolverhampton, England,

MANUFACTURERS OF

"Jenks" Spring Steel, Cast and Swedes Spring Steel,

TIRE, TOE CORK, SLEIGH SHOE, BLISTER & PLOW STEEL.

Also, Plow and other Iron.

VAN WART & McCOY, Agents,

43 Chambers St., New York.

A full assortment of "Jenks" Spring Steel in stock.

MILLER, BARR & PARKIN,

Crescent Steel Works,

PITTSBURGH, PA.,

Manufacturers of all descriptions of

STEEL

EQUAL TO ANY IN THE MARKET.

Office.....339 Liberty St.,

PITTSBURGH, PA.

Gunpowder.

GUNPOWDER

DUPONT'S

Sporting, Shipping, and Mining

POWDER.

DUPONT'S GUNPOWDER MILLS

ESTABLISHED IN 1801,

Have maintained their great reputation for years. Manufacture the

Celebrated Eagle Ducking, Eagle Rifle and Diamond Grain Powder.

Also, SPORTING, MINING SHIPPING, AND BLASTING POWDER

of all kinds and descriptions.

For sale in all parts of the country.

ed by

F. L. KNEELAND,

70 Wall Street, NEW YORK.

GUN-POWDER

LAFLIN & RAND POWDER CO.,

21 Park Row, New York,

invite the attention of the the Hardware Trade to their facilities for delivering

BLASTING, MINING and RIFLE

POWDER

IN EVERY PART OF THE UNITED STATES,

from having agencies and magazines at all prominent points, beside our works at

Newburg, Saugerties, Kingston, and Catskill, N. Y.; Scranton, Carbondale and Pottsville, Pa.; Baltimore, Md., and Platteville, Wis.

The superiority is well known of our brands Rifle Powder

Orange Rifle, *Orange Ducking,*
Lightning, *Audubon.*

SAFETY-FUSE at wholesale.

CHICAGO.

(Reported by Markley, Alling & Co.)

Agricultural Implements.—
Scythes—Dunn Edge Tool Co.....dis 30 %
Hay and Manure Forks—Otsego extra C. S.....dis 30 %
Hoes and Garden Rakes—Jackson and Otsego...dis 30 %
Scythe Stones.....dis 25 %
Scythe and Bush Snathes.....dis 25 %
Harvest Rakes and Barley Forks.....dis 25 %
Revolving Horse Rakes.....dis 25 %
Handles—Fork and Shovel.....dis 25 %
Cradles—Nithington, Cooley & Co.....dis 25 %
—Genuine Morgan.....₩ doz net $34 00

Augers and Bits.—
Ives' extra C. S....dis 30 % | Snell's.....dis 10 %
Jennings'.....dis 5 % | " Car Bits.....dis 10 %
Cook's.....dis 30 %

Axes.—Amoskeag Yankee.....₩ doz $13 50
Amoskeag Crescent..... " 14 00
Hunt's Yankee..... " 14 00
Kennebeck Yankee..... " 12 00
Lippincott " ..... " 13 00
" Crown..... " 14 00
" Beveled..... " 14 50
Jefford's Silver Steel..... " 13 00
Red Warrior, Beveled..... " 14 00
Kennebeck, Handled..... " 15 00
Boy's, Handled..... " 12 00

Bolts.—Carriage and Tire.....dis 75 %
Cast Barrel and Shutter.....dis 30&10 %
Wrought Iron Barrel.....add 10 %
" " Square.....net list

Butts.—Cast Fast Joint, Narrow.....dis 30 %
Cast Fast Joint, Broad.....dis 20 %
" Loose Joint.....dis 35 %
" " Pin, Reversible.....dis 35 %
" " Japanned.....dis 35 %
" " Silver Tipped.....dis 35 %
Wrought Narrow, Fast Joint.....dis 30 %
" Broad " " .....dis 30 %
" " Loose " .....dis 37½ %
" Loose Pin.....dis 30 %
" Table.....dis 30 %
" Brass.....dis 10 %
Garretson's Blind Butts, Wood.....doz sets $1 75
" " Brick.....doz sets 4 75
Parker's " Wood.....doz sets 1 85
" " Brick.....doz sets 2 75

Casters.—Iron Plate.....dis 25 %
Brass Wheel Plate.....dis 25 %
Porcelain Wheel Plate.....dis 25 %
" " Bed.....dis 25 %
Iron Wheel Bed.....dis 25 %

Chisels.—Butcher's Tanged Firmer.....dis 30 %
" " Long Paring.....dis 30 %
Witherby Socket Framing.....dis 50&20 %
" " Firmer.....dis 50&20 %
" " Corner.....dis 50&20 %
" " Slicks.....dis 50&20 %

Coffee Mills.
Box 4 Iron.....$ 3 75 | Box 85 Cast Steel.....$12 00
" 108 " ..... 5 25 | Side 50..... 4 75
" 102 " ..... 6 25 | " 60..... 5 75
" 107 Britannia... 7 50 | " 70..... 7 25
" 105 " ... 8 50 | " 90..... 18 00
" 25 Union..... 10 50 | " 15 Union..... 7 00
" 35 " ..... 12 00 | " 20 " 8 00
" 75 Cast Steel.. 10 50

Cutlery.—American Table.....dis 20 %
" Pocket.....dis 25 %

Door Springs.—Torry.....₩ doz $5 50
Rubber..... " 4 00
Boon's..... " 5 00

Drawing Knives.—Witherby Tool Co....dis 50&20 %
Ohio Tool Co.....net list

Files.—Butcher's.....$7 00 £
Nicholson's.....$5 00 @ $5 50 £

Hammers.—
Maydole's.....net list | Yerks & Plumb.....net list
| Cheney.....net list

Handles.
Extra Axe...₩ doz. $3 00 | Coal Pick, No. 1..₩ doz $2 00
No. 1 Axe.... " 2 25 | Sledge, No. 1..... " 2 00
No. 2 Axe.... " 2 00 | Hatchet..... " 65
R.R. Pick, No. 1 " 2 00 | Hammer, A. E.. " 65

Hatchets.—
| 1 | 2 | 3
Amoskeag Shingling | $7 25 | $8 00 | $8 75
" Claw | 7 75 | 8 50 | 9 22
" Lath | 7 50 | 8 25 |
" Solid Steel | 12 00

Hinges.—Strap and T.....dis 25c; ½ %
Screw Hook and Strap, 6 to 12 in.....net, 9c. ₩ lb
" 14 to 24 in.....net, 7½c. ₩ lb
Hook and Eye Hinges.....net 12c. @ 16c. ₩ lb
Gate, No. 35, State.....₩ doz $3 50
" No. 3, In and Out..... " 3 50
" Blinn's Pat..... " 7 50

Horse Nails.—Northwestern, 8d.....24c
Ausable, 8d.....24c
Globe, 8d.....26c

Kettles.—Brass.....54c | Enameled.....dis 20 %

Locks and Knobs.—
Norwalk Lock Co. dis 45 % | EagleLock Co.....dis 15 %
Branford " dis 45 % | Am. Pad Locks.....dis 33 %
| Cont'al Lock Co....dis 10 %
| Woodrun Patent ...net list
| Stowe's Sausage Stuffers.....net list
| Enterprise Patent...dis 5 %

Meat Cutters.—
Haven's Patent ...net list
Hale's " ...dis 10 %

Molasses Gates.—
Stebbin's Patent..dis 50 %

Nails.—100 to 600.....per keg $4 12½ @ 4 25

Oil Stones.—Washita No. 1.....net 30c ₩ lb
Washita Slips.....net 60c "
Hindostan No. 1.....net 9c "
" Axe.....net 10c "
" Slips.....net 15c "

Picks and Mattocks.—Picks, Railroad, Axe Finish.....₩ doz $12 00
Picks, Coal, Axe Finish..... " 10 00
Mattocks, L. C., Axe Finish..... " 15 00
" S. C., " ..... " 14 50
Grub Hoes, Axe Finish, No. 2..... " 1 00

Planes.—Ohio Tool Co., Bench.....dis 25 %
Sciota.....dis 30 %
A. Howland & Co., Bench.....dis 25 %
" Fancy.....dis 25 %
Bailey Patent Iron.....dis 15 %
Plane Irons, Butcher's.....dis 30 %

Rivets.—Iron.dis 10 @ 15 % | Copper, No. 7. net, ₩ lb, 50c
Tinned.....dis 10 @ 15 %

Rules.—Stanley Rule and Level Co.....dis 50&10 %
Hubbard & Curtiss Mfg. Co.....dis 50&10 %

Sad Irons.—Best A No. 1..... ₩ lb, 4c
" Copper Face Star..... ₩ lb, 4½c

Sandpaper.
Baeder & Adamson's No. 0 to 1½.....per ream, net $4 50
" No. 2 to 3..... " net 5 00
Wiggin & Stevens, No. 0 to 1½.....₩ ream, net, $4 50
" " No. 2 to 3..... " 5 00

Sash Locks.—Champion.....₩ gross, net, $12 00
Hopkins & Dickinson.....dis 10 %
Judd's Patent.....dis 10 %
Corbin's Patent.....dis 10 %
Clark's Patent.....dis 20 %

Saws.—H. Disston & Sons.....dis 10 %
Champion X Cut.....₩ foot, net, 60c
M. A. & Co. X Cut..... " 50c
Lightning Cut..... " 66c

Screws.—American Screw Co.—Iron...new list dis 50 %
American Screw Co.—Brass.....dis 50 %

Shovels and Spades.
Ames' Black Shovels.....₩ doz $14 50
" Polished " ..... " 15 50
" Patent " ..... " 18 00
Alling " ..... " 16 00
" " Molders'..... " 18 00
Crane's Black " ..... " 11 50
" Polished " ..... " 12 00
Smith's " B. S. L. H. Rd. Pt.... " 13 50
" " B. S. D. H. Rd. Pt.... " 14 00
Ames' Black Spades..... " 16 00
" Polished " ..... " 17 00
" Patent " ..... " 17 50
Alling " ..... " 16 00
Crane's Black " ..... " 12 50
" Polish'd " ..... " 13 50

Scoops.—Alling Steel Polished, No. 2.....₩ doz, $13 50
Alling Steeled Polished, No. 3..... " 14 00
" " No. 4..... " 14 50
" " No. 5..... " 15 50
" " No. 6..... " 16 50
" " No. 7..... " 17 50
" " No. 8..... " 18 50
" " No. 10..... " 21 50
Crane's Polished, No. 5..... " 13 50
" No. 6..... " 14 50
" No. 7..... " 15 50
" No. 8..... " 16 50
Crane's Black Coal, No. 4..... " 17 50
" " No. 5..... " 18 00
Preston, Black Scoops No. 1..... " 12 00
" " No. 2..... " 12 50
" " No. 3..... " 13 00
" Half Pol. Scoops No. 1..... " 12 50
" " " No. 2..... " 13 50
" " " No. 3..... " 14 50
Lippincott, Half Pol. No. 2..... " 15 00
" " No. 3..... " 16 00

Wrenches.—Taft's.....dis 60 %
Coe's Imitation.....dis 50 %
Coe's Genuine.....dis 30 %

Wringers.—Novelty Clothes Wringer.....₩ doz $69 00
Universal Clothes Wringer..... " 72 00

Chicago Metal Market.

(Reported by Cragin Bros. & Chandler, 141, 143, and 145 Lake St.)

Tin Plate.—
IC, 20x14, Cobe.....$12 00 | IXXX, 14x20, " ... 29 00
IC, 10x14, Charcoal. 13 00 | IXXXX, 14x20, " ... 76 00
IX, 10x14 " ... 16 00 | IX, 14x14, " ... 27 50
IC, 12x12, " ... 13 50 | DC, 100 Plate, " ... 13 00
IX, 12x12, " ... 16 50 | DX, " ... 16 00
IC, 14x20, " ... 14 00 | DXX, " ... 19 00
IX 14x20, " ... 16 00 | DXXX " ... 22 00
IXX, 14x20, " ... 20 00 | DXXXX " ... 25 00
IC, 14x20, Coke Roofing.....
IC, 10x20, Coke, for Gutters..... 20 00
IC, 14x20, Charcoal Roofing..... 12 50
IX, 14x20 " 15 50
IC, 20x28, " 26 00
IX, 20x28, " 31 00

Pig Tin.—
Large, 60 lb.....33c | Small, 30 lb.....34c
| Bar Tin.....33c

Zinc.—
In casks 1000 lbs.....c | In sheets.....11 c
" 500 " .....10¼c | Slab.....9c

Copper.—Copper Bottoms.....35c
Sheathing Copper.....34c
Planished Copper.....41c
" " cut to lengths.....43c

Braziers' Sheets, 30x60,—6 to 8 lbs.....41 c | 15 to 100 lbs.....38c
10 and 12 lbs..... 38c | Ingot Copper.....
| Bolt " 43c
Solder.—Extra Fine, C. B. & Co.'s Brand ..35c | Ordinary, No.....30c
Fine, No. 1..... 32c | Plumbers' Solder.....33c
| Braz'rs' or Spelt'r Solder 35c
Antimony.....30c
Babbit Metal.....15c @ 25c.
Galvanized Iron Conductor Pipe.....₩ lb 10c

Sheet Iron.—
| Common. | Smooth. | Charcoal.
No. 14 to 24..... | 5½c | 6¾c | 8¾c
25 & 26..... | 5¾c | 7 c | 9¼c
27..... | 6 c | 7¼c | 9¾c

Add ¼c ₩ lb for 30 in. wide.

Galvanized Iron.....dis 15 %

No. 16 to 20.....12c | No. 27.....15c
21 to 24.....13c | 28.....16c
25 & 26.....14c

Russia Iron.—
Perfect.....22c | No. 1 Stained.....30c
| In sheets, 1c. higher.

American Russia.—
A.....15c | B.....11c
| In sheets, 1c higher.

Lead.—
Pig.....8 c | Lead Pipe, in full coils 10 c
Bar.....9½c | Lead Pipe, when cut. 10½c
| Sheet Lead.....10½c

BOSTON.

(Reported by Macomber, Bigelow & Dowse, 42 to 48 Batterymarch St.)

Anvils.—Eagle, ₩ lb 11c. currency.....dis 15 @ 15&5 %
Augers.—Watrous Ship.....dis 10 %

Axes.—Forester's Favorite, Bronzed.....$12 50
Blue Jackets, Blue..... 12 00
Chopper's Prize, Bronzed..... 11 00
Red Cross, Red..... 10 50
Red Cross, Handled..... 13 50
Boy's Handled Blue Jackets..... 12 00
Hunts Axes.....₩ doz $15 @ 17 50 net @ 5 %
" Hatchets.....net
Shingling Nos. 1, 2, 3.....₩ doz $7 25 8 00 8 75
Claw " 1, 2, 3..... " 7 75 8 50 9 25
Lathing " 1, 2, 3..... " 7 50 8 25 9 00

Axe Handles.—Hickory, Fisher Pat..No. 1 ₩ doz $2 75
Hickory, Fisher Pattern..... " 2 " 2 00
Oak, " " ..... " 1 " 2 75
" " " ..... " 2 " 2 00
" " " ..... " 3 " 1 50

Blind Hinges.—Washburn's....per hundred set $10 00
Blind Fasts.—Washburn's.....per hundred set $6 00
Bells.—"Connell's" Thumb Latch.....dis 50&10 %
Bolts.—Carriage. Phila.." Girard Works.....dis 50&5 %
Borax.—Best, cases and bbls.....₩ lb 18c
Borers.—Augie, Backus'.....dis 30 %
Boring Machines.—Angie.....each $4 15
Common. Snell's quality.....each 3 75
Braces.—Barber's.....dis 40&5 %
Backus'.....dis 50 %
Spofford's.....dis 40 %
Butts.—Union Drilled Loose Joint.....dis 60 %
" " Wire Fast Joint.....dis 50 %
" " Acorn Loose Joint...dis 50&10 %
Brass Butts.....dis 30 %
Wrought Table Butts and Back Flaps.....dis 30 %
Wrought Narrow Butts.....dis 30 %
Cartridges.—" U. S. Cartridge Co."....dis 50 %
Chisels.—"Buck Bros.' Shank Goods....add 20 @ 22½ %
Sockets.....add 22½ @ 25 %
Compasses and Dividers.—Bemis'.....dis 35 %
P. S. & W.....dis 25 %
Cordage.—Manila (usual trade dis.).....₩ lb, 16½c
American Tarred Hemp Lath Yarn.....₩ lb, 10c
Crow Bars.—Iron. Steel Points.....₩ lb, 5½c
"Sweet" Steel Bars.....₩ lb 11c
Brown's Steel Bars.....₩ lb 10c
K. P. & Co. Solid C. S.....₩ lb 15c
Dividers.—Crook's Nickel Plated.....dis 15 %
Door Springs.—Stimson's Patent.—
No. 7, Light inside doors, $12 00.....dis 25 %
No. 8, " outside " $15 00.....dis 25 %
Torrey's.....$4 00
Drawing Knives.—Kimball Solid Steel.....7½c inch
Emery.—Wellington Mills.....₩ lb 10c
Alden's.....₩ lb 7c
Files.—Earl Smith & Co.'s English.....$5 to £ gold
American.....$5 to £ currency, less 40 %
Nicholson.....$5 to £ currency, less 10 %
Stubb's Tapers, genuine, 3 in., $1 50; 3½, $1 62½; 4, $1 88; 4½, $2 13; 5, $2 50.
Funnel Irons.—$2 50 $2 50 $2 50 $3 25 per doz
5, 5½, 6, 7 inch
Deep Flange, $3 50 $3 75 $4 00 per doz
5, 5½, 6 inch
Hammers.—Maydole.....dis 5 %
M., B. & D., solid cast steel, adze eye, No. 1, $10; 1½, $11; 1¾, $9 75.
" " " " bell face, No. 1, $11; 1¼, $9 75.
Hangers & Rollers.—Novelty.....dis 30 %
Hatchets.—Underhill Edge Tool Co.....dis 10 %
Underhill pattern, solid, C. S. lathing.....$9 50
Underhill Bros. pattern, solid C. S. Lathing.....10 00
C. F. Dowse, warranted Cast Steel—
Shingling.....0, $4 75; 1, $5 25; 2, $5 75
Claw.....1, 5 75; 2, 6 25
Lathing.....1, 5 50
Axe Pattern.....1, $7 00; 2, 7 50
Broad.....0, $5 25; 1, $6 50; 2, $7 50; 3, $9 25; 4, $10 75; 5, $12 75; 6, $14 75.
Hinges.—Strap and T, Stanley Works.....dis 25&7½ %
Plate, Loose and Fast Joint.....₩ lb 7½c
Wrought Screw Hook.....₩ lb 8c
Hoes.—Ely Balch & Co. M., B. & D.'s list, 1874...dis 25 %
Remington, M., B. & D.'s list, 1874.....dis 30 %
Clement & Maynard, M., B. & D.'s list, 1874.....dis 35 %
Lead.—Sheet and Pipe.....9c—dis 10 %
Locks.—P. & F. Corbin.....new list dis 45&5 %
Manure Forks.—
Myers & Ervien, M., B. & D.'s list, 1874.....dis 25 %
Peck, Clark & Co., " " .....dis 25 %
Shumway & Co., " " .....dis 30 %
Partridge (Original) " " .....net
4 square Tine, $12 00; 6 square Tine, $24 00.
4 oval Tine, $12 00; 5 oval Tine, $18 00; 6 oval Tine $24 00.
Mattocks.—R. P. & Co., axe finish, long cutter..$13 75
Short cutter..... 13 50
Metal.—Babbitt, No. 1, 35c; 2, 25c; 3, 16c; 4, 15c ₩ lb
Nails.—10d and larger.....$4 25
Padlocks.—Wilcox.....dis 50&2 %
All Brass, 2¾ inch, 2 keys, job lot.....$9 00
Picks.—R. P. & Co., Polished Points—
5 to 6.....per doz $9 00; 6 to 7, $9 50
Potato Digger.—
"Partridge," 6 square tine.....₩ doz $12 00
Shumway & Co., 6 round tine..... ₩ doz 9 00
Pulleys.—Clark & Co.'s Axle, 2 in.....per doz 42c
Plated Ware.—Rogers Bros.....new list dis 30 %
Plumb & Levels.—" Davis" Pat. Adjust..dis 60&10 %
"Davis" Pat. Adjustable Inclinometer, wood and iron.....dis 33½ %
Pocket Knives.—Conn. Cutlery Co.....new net list
Rakes.—Cast Steel, garden.....dis 30 %
Malleable.....dis 25 %
Rivets.—Black.....dis 25 %
Carriage, oval head, Nos. 3, 4, 5, 6, 7, 8, 13 13 14 14 15 16c ₩ lb net
Sad Irons.—Bliss & Drake.....₩ lb 4¾
Sand Paper.—0 to 2, $4 25; 2 to 3, $4 75..new list dis 10 %
Saws.—Disston's.....dis 12½ %
Lightning X cut, Boynton's.....per foot 6c
" Saw Blades, 32 inch.....per doz $7 00
" Framed Saws.....per doz 8 50
Common " " .....per doz 6 00
Disston " " .....per doz 9 00
One man X cut.—Lightning.....$2 75 each
Disston's $3 00 each.....dis 12½ %
Saw Clamps.—Reading.....$11 25
Screws.—American Screw Co.....revised list dis 52½ %
Scythe Stones.—
"Willoughby Lake," first quality.....₩ gross $6 50
second quality..... 3 00
Shovels.—O. Ames.....new list dis 12½ %
M. B. & D.....new list dis 12½ %
Sifters, Coal.—McMasters.....$12 00
Spading Forks.—M. & E.....dis 25 %
Stone Pickers.—"Partridge," original...₩ doz $15 00
Tools.—Aiken's Pattern, 20 in set; Miller's Falls, $12 00 per doz.....dis 15 %
Traps.—Oneida.....dis 30 %
Blake's.....dis 20&5 %
Trowels.—Bisbee Patent Ferrule.....net list
Vises.—K. P. & Co.'s Solid Box, Blacksmith...₩ lb 14½c
Parker's Parallel.....dis 10 %
Backus.....dis 25 %
"Howards." Parallel.....dis 15 %
Wardrobe Hooks.—Wire to drive.....₩ gross $1 00
Weights.—Window Weights.....₩ lb 2½c
Wire Netting.—Clinton Wire Cloth Co.....₩ lb 6½c
Wrenches.—Coe's Genuine Wrenches.....dis 40&5 %
Coes' Pattern.....dis 60 %
Wringers.—
Novelty and Universal } Tub No. 2 { 1 doz lots.....per doz 69 00
2 doz lots.....per doz 67 00
Novelty Bench, No. 4, 1 doz lots.....per doz 101 00

Boston Metal Market.

(Corrected by Fuller, Dana & Fitz.)

Tin Plates.—₩ box
I. C. Char. 10x14 @ $12 50
I. C. Coke 10x14.. 11 00

Pig Tin.— ₩ lb
Banca..... 36c

Copper.— ₩ lb
Sheathing..... 33c

Lead.— ₩ lb
Pig..... 7½c
Char. Roof. I C, 10x14 $12 00
Coke " I C, 10x14 11 00
Straits..... 31c
English..... 30c
Bolt..... 35c
Ingot..... 26c
Sheet and Pipe..... 9c

Spelter......₩ lb 9½c
Zinc.—Sheet.....₩ lb 10¼c
Antimony...... " 11c
Iron.—Sheet Iron, Russia..... " 19c
Sheet Iron, English..... " 5½c
" " American Refined..... " 6½c
" " Galvanized..... " 11½c
Plate Iron.....
Swedish and Norway Bar Iron, gold.....₩ ton, $135 00
" " " Shapes, gold..... 142 50
Norway Nail Rods, first quality, gold..... 162 50
" " second " " 147 50
Best Refined Bar Iron..... 75 00
The "Burden Best" Iron..... 112 00
American Pig Iron, Foundry, No. 1, x.... 38 00
" " No. 2, x.... 36 00
" " Gray Forge..... 32 00
Scotch Pig Iron.....₩ ton 44 00 @ 48 00
Wrought Scrap Iron..... 42 50

Steel.— ₩ lb
Eng. Tool..... 18c
American Tool 15½c
" Mach 11c
Bessemer..... 7½c

German..... 4 c
Spring..... 4 c
Tire..... 4 c
Sleigh Shoe..... 5½c
Toe Calk..... 5½c

ST. LOUIS.

Corrected weekly by Semple, Birge & Co.

Anvils.—Armitage.....₩ lb, gold, 18c
Peter Wright's..... " 14c
Wilkinson's..... " 12½c

Apple Parers.—Conqueror.....₩ doz, $9 0
Lightning..... " 9 00
Turn Table..... " 9 00

Axes.—Hunt's.....₩ doz $13 00 @ 13 50
Lippincott's..... " 12 00 @ 13 00
Lippincott's Pioneer..... " 13 00 @ 13 50
Simmons'..... " 12 00 @ 13 00

Axles.—Kritch & Crane Mfg. Co.'s—
Patent Taper Axles.....new list net
Swelled Taper Axles.....new list net
Concord Axles.....new list net
Red Jacket Axles.....new list net
Common Axles, 1⅛ inch and upward.....₩ lb, 8½c
" " less than 1⅛ inch..... " 8¾c

Bellows.—"Best St. Louis make" 60c ₩ in. dis 20 %

Bells.—Troy, Church.....₩ lb, 50c
Light Brass, Hand.....dis 50 %
Moore's, Cow.....dis 20 %

Bolts.—Arms, Bell & Co.'s Machine.....dis 20 %
Arms, Bell & Co.'s Carriage and Tire.....dis 70&15 %

Cast Butt Hinges.—Western Butt Co.'s—
Narrow Fast Joint.....dis 35 %
Broad Fast Joint.....dis 50 %
" Loose " .....dis 60
Reversible.....dis 45 %
" Japanned and Silver Tipped.....dis 45 %
Loose Joint "Acorn" " " .....dis 55 %
Excelsior Reversible Blind.....dis 30&10 %
Lull & Porter's Blind.....dis 45 %

Wrought Butts.—Narrow.....dis 20 %
Reversible.....dis 25 %
Broad.....dis 25 %
Table Hinges.....net list
Back Flaps.....net list
Inside Blind Hinges.....net list

Chain.—Eng. Coil. ⅜-16 ⅝ 5-16 ½ 7-16 ⅜ in.
13 11 10 9¾ 9 8c
Trace.....6½-10-2 70c " gold
⅞-10-2 75c "
German Coil and Halter.....revised list add 10 %

Chisels.—Socket, Firmer or Framing.....dis 55 %

Clothes Wringers.—Crown.....₩ doz $60 00
Novelty..... " 72 00
Universal..... " 72 00
Monitor..... " 72 00

Corn Knives.—Dunn E'ge T'ol Co.'s Clip..₩ doz $5 75
Disston's..... " 6 00

Crow Bars.—Steel Pointed.....₩ lb 7 @ 9c
Solid Cast Steel..... " 20c

Cutlery.—J. Russell & Co.'s.....
Lamson, Goodnow & Co.'s..... } new list, dis 15 %
Landers, Frary & Clark's..... }

Files and Rasps.—
Nicholson's Files.....$5 00 less 5 %
Butcher's Mill..... 6 75 to the £ currency
Heller's & Lyon Horse Rasps.....dis 40 %

Forks and Hoes.—
Auburn Mfg. Co.'s Hay and Manure Forks.....dis 30 %
" " Handled Hoes.....dis 30 %
" " Planter Eye Hoes.....add 5
Winsted's Planter Eye Hoes.....add 5

Hammers.—Yerkes & Plumb.....dis 5 %
Masons' Hammers.....₩ lb 20c
Smith Hand Hammers..... " 22c

Handles.—Axe.....Extra. $2 75 No. 1. $2 25 No. 2. $1 75 No. 3. $1 00
Pick.....Extra. $2 50 No. 1. $2 00 No. 1½. $1 75 No. 2. $1 25
Smith & Montross Fork, Hoe and Rake.....dis 20 %
" " Broom and Mop.....$12 @ $18 ₩ M

Harrow Teeth.—1 inch ron.....₩ lb 4½c
⅞ and ¾ inch iron..... " 4¾c
⅝ inch iron..... " 5 c
Barbed or Headed.....½c extra

Hatchets.—Hunt's.....dis 10 %
Simmons'.....dis 15 %

Hay Knives.—Lightning.....₩ doz $22 00
Dunn Edge Tool Co.'s.....₩ doz $14 50—dis 15 %
Fisher's..... " 16 50—dis 10 %

Hinges.—Strap and T—St. Louis make.....dis 25 %

Horse Nails.—Eureka.....25c rate
Ausable.....22c "
Northwestern.....22c "
Eagle.....19c "
National Patent Pointed.....21c "
" " " Extra Finished.....23c "

Horse Shoes.—R. I. (Perkin's pat.).....₩ keg $6 50
Burden's..... " 6 50
Mule Shoes..... " 7 50
Rhode Island Trotting Shoes..... " 9 00

Locks and Latches.—
Jones & Nimick's.....revised list dis 40 %
Moorhead, Adams & Co.....revised list dis 40 %
Norwalk Lock Co.'s.....revised list dis 40 %

Mattocks and Grub Hoes.—
Klein, Logan & Co.'s Mattock's....₩ doz. $15 00 @ 16 00
" Grub Hoes, Oval Eye....₩ doz. 12 00 @ 13 00

Nails.—Wheeling.....$4 35 rates
Orders for 100 kegs 10c ₩ keg less.

Picks.—Klein, Logan & Co.'s R. R. and Clay ₩ doz $12 00
Klein, Logan & Co.'s Coal..... " 9 75
" " Poll..... " 12 00
" " Stone..... " 16 50
" " Tamping..... " 19 00

Planes.—Ohio Tool Co.'s.....dis 25 %
Sciota.....dis 30 %

Post Hole Augers.—Clark's Patent—
No. 1, ₩ doz. $27; No. 2, $30; No. 3, $32.....dis 30 %
Barton's Patent.....₩ doz $25—dis 20 %
Vaughn's " .....$25—dis 10 %

Sad Irons.—Monitor Brand, Silver Polished..₩ lb 4½c

Sash Weights.—Standard Solid Eyes.....₩ lb 3½c

Saws.—Disston's.....dis 10 %
Spear & Jackson's.....£5 00 to £ gold
Hubbard, Lippincott, B. & Co.'s.....dis 10 %
Branch, Crooks & Co.'s.....dis 15 %
Livingston's Patent Buck.....net list

Screws.—American Screw Co.'s revised list...dis 50 %
$2500 worth in 6 months.....2½ % extra

Scythes.—
Dunn Edge Tool Co.'s.....new list dis 25 %
Paris Furnace Co.'s.....dis 30 %

Scythe Stones.—No. 1 Ind'n Pond ₩ gr's, $7 00
Extra Indian Pond..... " 7 50
Premium..... " 9 50
Diamond Grit..... " 13 50
} dis 25 %

Shovels, Spades and Scoops.—
Ames'.....dis 7½ %
Lippincott's.....new list dis 10&5 %
Rowland's, Maxwell.....revised list dis 12½ %

Sledges.—Smith's Stone or Coal Sledges—
Steel Face Polished.....₩ lb, 17c
Solid Cast Steel..... " 35c
Striking Sledges.....₩ lb extra, 1c

Spaths and Cradles.....dis 25 %

Springs.—Cleveland Spring Co.'s—
Carriage and Express.....dis 30 %
Blue Seat Springs.....new list dis 15 %

Tacks.—Norway Tack Co.'s ½ weight.....dis 70 %
Brads ½ weight.....dis 50 %

Thimble Skeins.—Pump & Skein Co.'s...dis 50&10 %

Traps.—Newhouse Patent.....dis 15 %

Vises.—Solid Box.....₩ lb 16c
Wilson Mfg. Co.'s.....dis 15 %

Wrenches.—Coes' Genuine.....dis 33⅓ %
Coes' Pattern.....dis 50 %
Taft's.....dis 60 %

St. Louis Metal Market.

(Corrected Weekly by Messrs. R. Sellew & Co.

Tin Plate.
IC, 10x14, Charcoal...$13 00 | IC, continuous, 20 in. x 200 ft.....
IX, 10x14, " ... 16 00 | IX, continuous, 20 in. x 200 ft.....
IC, 12x12, " ... 13 50 | IC, 10x14, best Coke...$12 00
IX, 12x12, " ... 16 00 | IC, 10x14, good " ... 11 50
IC, 14x20, " ... 14 00 | IC, 10x20, " ... 19 50
IX, 14x20, " ... 17 00 | IC, 14x20, " ... 15 50
IC, 20x28, " ... 12 50 | IC, 14x20, Coke Lead. ₩ 00
IX 20x28, " ... 25 50 | IC, 10x14, punch'd for Safes..... 11 00
IX 20x28, Terne..... 30 50

Block Tin.
Large Pigs.....30c | Bars.....32c
Small " .....31c |

Sheet Zinc.
Casks.....₩ lb 10 c | Sheet.....₩ lb 11c

Solder.
No. 1, Refined, in bars or plate.....30c
No. 2, " " " 19c
Pig Lead.....8 c

Sheet Copper.—18 to 100 lbs. Sheets 30x60.....35c
14 to 16 lbs., Sheets 30x60.....35c
10 to 12 lbs., " and 30x72.....39c
6 to 9 lbs., " 41c
Tinned, 14 and 16 oz. 14x48.....34c
Planished, 14 and 16 oz. 14x48.....41c
" No. 7, 8 and 9.....43c
Copper Bottoms.....35c

Sheet Iron.—
| Com'n | Sm'th. | Char'l. | Juniata.
No. 16 to 20..... | 5½c | 6c | 8c | 10c
No. 22 to 24..... | 5½c | 6c | 8c | 10c
No. 26..... | 5¾c | 6¼c | 8¾c | 10¼c
No. 27..... | 6c | 6½c | 8¾c | 10¼c

Galvanized Iron.....dis 15 %
Iron Rivets.....dis — %
Iron Wire.....dis 30 %
Coppered Market Wire.....dis 25 %
Copper Rivets and Bars.....dis 10 %
Russia Iron.—Nos. 9, 10, 11 and 12, ₩ lb.....29c
No. 1, stained, ₩ lb.....30c
Imitation Russia, ₩ lb.....14c

Woodruff Iron Works,

HARTFORD, CONN.,

Office, - - - - - - No. 223 State Street.

Manufacturers of the Celebrated

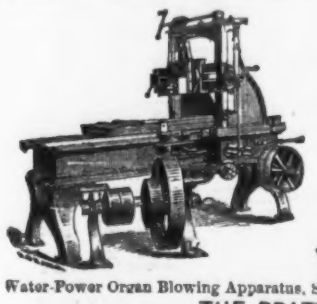
WOODRUFF & BEACH STEAM ENGINE,

With Recent Improvements.

STEAM BOILERS

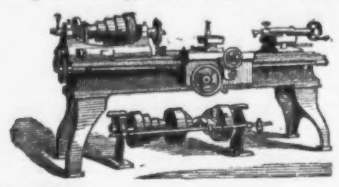
Constantly on hand, and made to order—of any size or style. Special attention given to all kinds of

MILL MACHINERY & CASTINGS.



MACHINISTS' TOOLS

Of excellent designs and workmanship, complete, with best modern attachments. Gun and Sewing Machine Machinery and Fixtures in great variety, Friction Clutch Pulleys



Water-Power Organ Blowing Apparatus, Special Machinery, &c., made by

THE PRATT & WHITNEY COMPANY, Hartford, Conn.

RICHARD DUDGEON,

No. 24 Columbia Street, New York,

MAKER AND PATENTEE OF

Hydraulic Jacks and Punches,

ROLLER TUBE EXPANDERS

And Direct-Acting Steam Hammers.

Communications by letter will receive prompt attention.

JACKS for Pressing on Car Wheels or CRANK PINS made to order.

The "EMPIRE," a Fan Blowing

PORTABLE FORGE,

(Patent Applied for.)

Without BELTS or BELLOWS.

It is more Easily Worked, gives a Better Blast, and is the Cheapest forge made, and

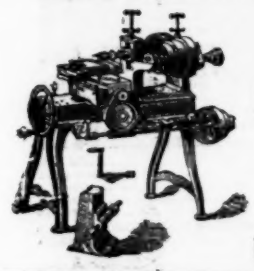
☞ It has no Back Draught.

W. P. KELLOGG & Co., Troy, N. Y.

And 84 Chambers St., N. Y.

Also Curry Combs, Boring Machines, and Cooley's Whip Racks, etc., etc.

LINCOLN'S MILLING MACHINES.



PHŒNIX IRON WORKS.

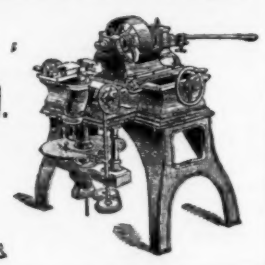
GEO. S. LINCOLN & CO.

HARTFORD, CONN.

Machinists' Tools,

AND

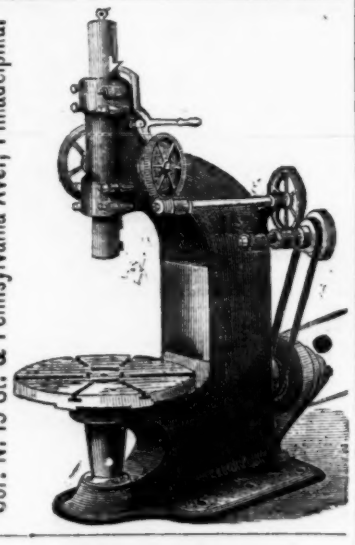
LINCOLN'S FRICTION [illegible] PULLEYS.



E. HARRINGTON & SON,

Manufacturer of ENGINE LATHES, from twelve (12) to forty-eight (48) inches swing; Hand Lathes; Wood Turning Lathes; Vertical Drills; Boring Mills; Tapping and Centering Machines; Screw Press, for Mandrels; Grindstone Boxes.

Cor. N. 15 St. & Pennsylvania Ave., Philadelphia.



STAVE SAW.

Gauge Lathes, Screw Machines,

Stave Saws, Woodworth Planers,

Tub, Pail and Chair Machinery, a specialty, by

GOODSPEED & WYMAN, Winchendon, Mass.

GUILD & GARRISON'S

STEAM PUMP WORKS,

Nos. 30 to 34 First Street, Williamsburgh, N. Y

MANUFACTURERS OF

STEAM PUMPING MACHINERY

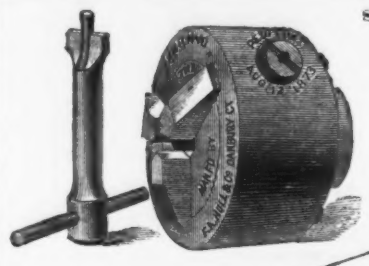
Of all descriptions and for all purposes, of any proportion or size, for pumping Hot, Cold, Fresh, Salt, Muddy or Gritty Water, Grain-mash, Syrups all kinds of Beer, Acids, Molasses, and all heavy and thick fluids. Also for Feeding Steam Boilers, Supplying Tanks, and for Sugar Refineries, Tanneries, Oil Refineries, Gas Works, Hotels, Breweries, and for all classes of manufactories: for Draining Mines and Excavations, and for Rolling Mills, Blast Furnaces and Water Works supplying Cities, Towns and Villiages with Water; also, for Wrecking purposes and Steam Fire Engines for Land and Sea.

Also, Manufacturers of Vacuum Pumps, Duplex and Single, and Copper or Iron Vacuum Pans of all sizes and for all purposes, with complete fixtures for Refining Sugar, Corn Syrup, Glue, &c., or for condensing Milk, Extracts, Chemicals, &c., &c.

All Work from this Establishment fully Warranted.

Catalogues mailed on application.

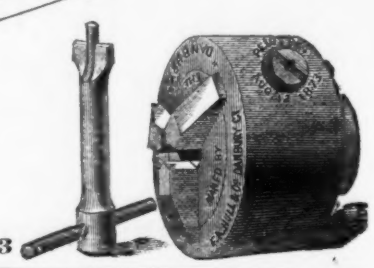
Send for Illustrated Descriptive Circulars.



The "Danbury" Universal Drill Chuck.

Not equalled in any essential. Only Chuck holding drills from ¼ down to 0. Runs true on all sizes, and will never slip or "set."

F. A. HULL & CO., Manufacturers, Danbury, Conn.



C. H. Reid's Patent, Aug. 12th, 1873

SELDEN PATENT

DIRECT ACTION STEAM PUMP,

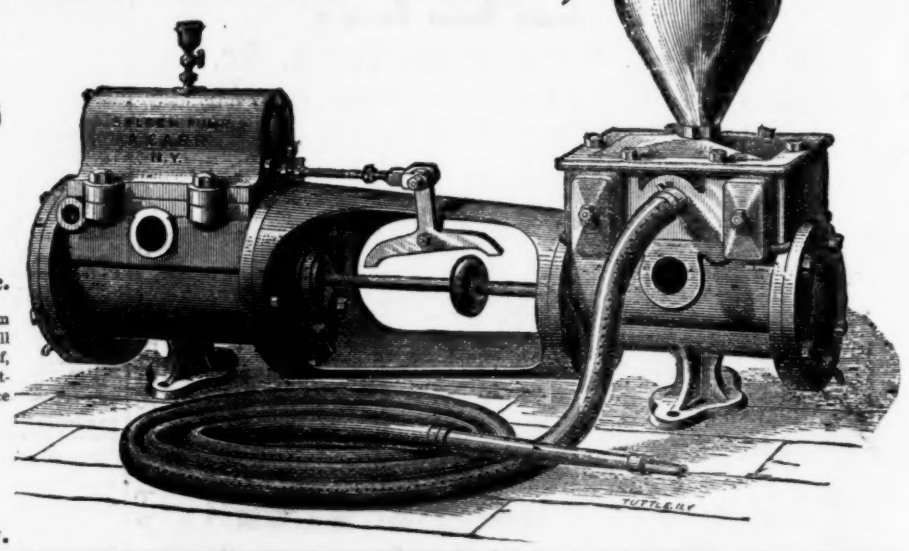
Patented August 2nd and December 20th, 1870.

Tank Pump, with Boiler Feed Attachment.

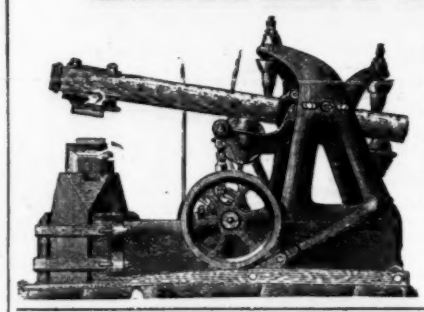
For Boiler Feeders,
For Water Works,
For Fire Pumps,
For Mines, etc., etc.

And for all purposes for which Steam Pumps can be used. Sold under full guarantee. Money will be returned if, from any cause, they should prove unsatisfactory. Send for Circular and Price List, fully describing them, to

A. CARR,
43 Cortlandt Street,
New York City.



BRADLEY'S CUSHIONED HAMMER.



This Hammer has many valuable improvements made useful in the device for cushioning the blow, thereby relieving all the working parts from that jar and concussion which is the destroying element of other Helve Hammers. It is made Adjustable in Line of Action, Length of Stroke, Rapidity of Motion, and Weight of Blow, all of which are controlled at the will of the operator. They have *Larger Capacity, Cost Less,* are more *Durable,* take up *Less Room,* do *More* and *Better Work* at *Less Expense* for Power than any other Hammer in use. We guarantee them fully as recommended. For particulars, address

Bradley Manufacturing Co.,
SYRACUSE NEW YORK.

CHARLES CHURCHILL & CO.,

American Merchants & Importers of Machinery & Tools,

28 Wilson Street, Finsbury, London, Eng.

New York House, W. CHURCHILL & CO., 493 Greenwich St., N. Y.

To AMERICAN MANUFACTURERS we offer our services for the introduction, in Great Britain and the Continent, of MACHINERY and TOOLS of improved construction. It is now seven years since we established ourselves in London, and during that time we have succeeded in establishing a demand which is now rapidly increasing, thus proving the value of these goods throughout Great Britain and the Continent. We are now the European Agents for several leading American Tool Makers, to whom we will give reference on application to either our London or New York house.

We invite all makers of improved Machinery and Tools to communicate with us, sending us catalogues and price lists. We shall be pleased to take up and introduce all such goods suitable to this market. Having successfully introduced American Vises, Chucks, Drills, Drilling Machines, Pumps, and a variety of other tools and household utensils, we are confident all good and useful articles will meet with success.

We are European Agents for *The Iron Age*, to whom reference may be made.

AMERICAN MANUFACTURERS receiving orders from abroad can communicate with our New York house and execute the orders through us, thus avoiding all risks.

C. CHURCHILL & Co. also offer their services to all purchasers of Machinery and Tools in Great Britain and Europe who may require special goods, for which quotations will be given on application. A *Stock* of Tools and Machinery are kept in our London Warehouse for immediate delivery.

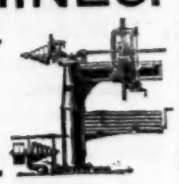
Catalogues and Price Lists sent post free on application.

DRILLING MACHINES.

Portable, Radial, Multiple, Vertical, Horizontal, Special.

THORNE, DeHAVEN & CO.,

21st. St. above Market St., Philadelphia.



TACKLE BLOCKS.

BURR & CO

Manufacturers of Waterman and Russell

PATENT IRON STRAPPED BLOCKS,

ALSO, MANUFACTURERS OF

ROPE STRAPPED BLOCKS,

91 PECK SLIP NEW YORK.

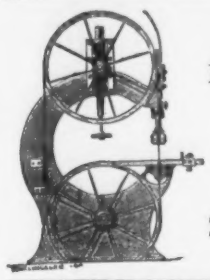
Machinery, &c.

ANDREW WATSON,
MACHINIST and ENGINEER,

Nos. 537 & 539 Dickinson Street,
Near Trenton Avenue, 19th Ward, PHILADELPHIA.

Builder of *Vertical Steam Engines and Boilers*, peculiar for their economy of space and fuel, safety and quickness in raising Steam. Also, sole manufacturer of *Improved Balance Governor* with automatic stop, *Balance Slide Valve, Safety Valves, Stop Valves, Improved Pistons for Engines*, which require no setting by the Engineer. Engine Builders and Dealers supplied with *Governors, Stop Valves, Safety Valves, &c., &c.* These governors are fitted up in the very best manner, with brass Valves and Seats, which will not corrode or stick fast. Guaranteed to regulate under any irregular load which an Engine is subject to. Millwright work executed, and Machinery in general satisfactorily repaired.

Engines Indicated Promptly and with the Greatest Accuracy.



BAND SAW MACHINERY

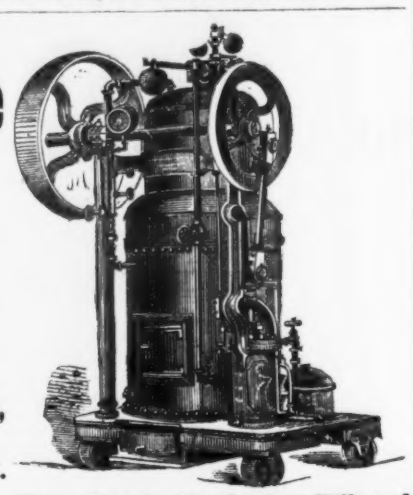
For Ship & Car Builders, Agricultural, Wagon, Pattern and Cabinet Shops.

"Perin" French Band Saw Blade

KEPT IN STOCK.

RICHARDS, LONDON & KELLEY,
22nd above Arch, PHILADELPHIA.

THE
Shapley Engine



COMPACT,
PRACTICAL,
DURABLE,
ECONOMICAL.

$200·00.

Cheaper than any Engine offered of the same capacity.

MANUFACTURED BY

SHAPLEY & WELLS,
Binghamton Iron Works,
Binghamton, N. Y.

Manufacturers of **Steam Engines, Boilers, Water Wheels, Circular Saw Mills and Mill Work generally.**

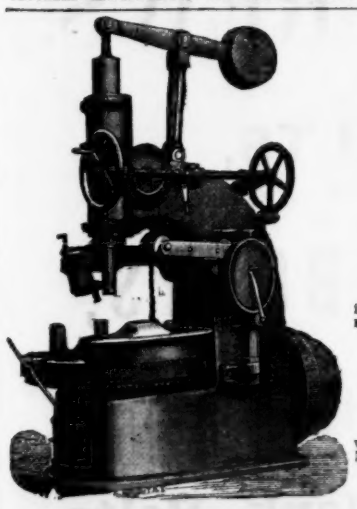
Fairmount Machine Works,

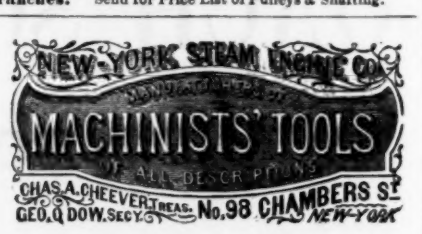
Office, 2106 Wood St., Philadelphia, Pa.

THOMAS WOOD, *Adjustable Self-Oiling Post Hanger 6 in. from post to center of shaft.*

MANUFACTURES AS SPECIALTIES,

POWER LOOMS, with (new) Patent Box Motion. SPOOLING, BEAMING, DYEING and SIZING MACHINES.
BOBBIN WINDING MACHINES—wind direct from hank or skein to shuttle bobbin.
SHAFTING, with Patent Adjustable Self-Oiling Bearings.
PLANS taken, and FACTORIES fitted out complete with Shafting and Gearing.
PULLEYS, from 4 inch to 10 feet diameter, of most Approved Pattern.
SELF-ACTING WOOL SCOURING MACHINES, (Yewdall's Patent.)
Machine and Foundry Work in all their branches. Send for Price List of Pulleys & Shafting.





We have the best and most complete assortment of

MACHINISTS' TOOLS,

in the country, comprising all those used in **Machine, Locomotive** and

R. R. REPAIR SHOPS.

We make a specialty of manufacturing

Gear Wheels of all Descriptions,

which are made absolutely perfect, with **Patent Gear Molding Machine.**
☞ For Photographs, Prices and Description, etc., address
N. Y. STEAM ENGINE CO.,
98 Chambers Street, New York.

STURTEVANT

Pressure Blowers, Fan Blowers and Exhaust Fans.

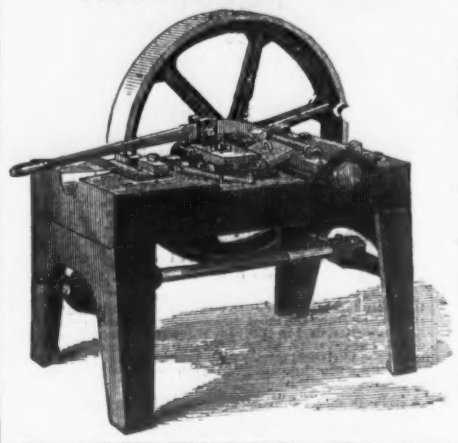
10,000 SOLD IN SIX YEARS.

SEND FOR ILLUSTRATED CATALOGUE.

B. F. STURTEVANT, 72 Sudbury Street,
BOSTON, MASS.

Machinery, &c.

IMPROVED BOLT MACHINERY.



BOLT HEADER,

That will head 10,000 per day.

Single & Double Head BOLT CUTTERS,

That will cut from 5000 to 10,000 per day.

Bolt Pointers, Tapping Lathes, Tire Blank and Rivet Headers, Engine Lathes, &c.

Manufactured by

THE
Chapin Machine Co.,
New Hartford Conn.

Established 1848.

WM. SELLERS & CO.,

1600 Hamilton Street, PHILADELPHIA.,

Engineers, Iron Founders and Machinists.

RAILWAY SHOP EQUIPMENTS.

Our Steam Hammers, Lathes, Planers, Drills and Bolt Cutters
Are of Improved and Patented Construction.

Railway Turning and Transfer Tables,
SHAFTING & MILL GEARING, a specialty.

Pivot Bridges.

☞GIFFARD'S INJECTOR--IMPROVED, SELF-ADJUSTING.☜

BUSH HILL IRON WORKS,

Corner 16th & Buttonwood Streets,
PHILADELPHIA.

JAMES MOORE,

(Successor to MATTHEWS & MOORE,)

Engineer, Machinist, Founder and Boilermaker,

CASTINGS of every description.

ROLLING MILL AND FURNACE EQUIPMENTS COMPLETE.

Rolls Turned for Rails, Beams, Angles, and all shapes for Iron, Steel, or Composition Metals.

Sugar Mill, Saw Mill and Grist Mill Machinery,
AND MILLWRIGHTING IN GENERAL.

BOILERS—FLUE, TUBULAR AND CYLINDER, and all kinds of
TANK AND PLATE IRON WORK.

THE AMERICAN DREDGING CO.

BUILDERS OF STEAM DREDGING MACHINES,
GUNPOWDER PILE-DRIVERS, &c.

CONTRACTORS FOR
IMPROVING RIVERS AND HARBORS,
EXCAVATING CANALS,
RECLAIMING AND FILLING LOW LANDS,
PILING FOR FOUNDATIONS, PIERS, Etc.

Offices, No. 10 South Delaware Ave., Philad'a.

WM. B. BEMENT & SON,

INDUSTRIAL WORKS, Philadelphia, Pa.

MANUFACTURERS OF

MACHINISTS' TOOLS

Of all descriptions.

STEAM HAMMERS a specialty.

Machinery, &c.

WESTON'S
PATENT DIFFERENTIAL
Pulley Blocks.

Warranted superior to any made.

RATCHET DRILLS,

Machine Finished, Case Hardened and Interchangeable.

Self-Sustaining Rope Pulley Blocks

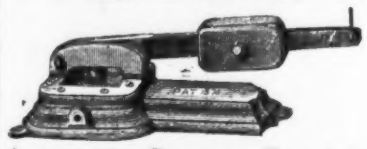
Being worked with a rope the motion is quick and steady, and in many cases is more suitable than the chain block. It is self-sustaining, the eccentric brake being put in or out of action by moving the hand-rope to the right or left, or by pulling the rope outward. The weight can be lowered or sustained at any desired point.

VAN WART & McCOY,
Sole Agents,
43 Chambers Street, NEW YORK.

JAMES HENSHALL,
Engineer, Machinist & Blacksmith
1056 Beach St., PHILADELPHIA.

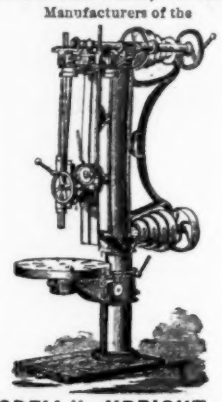
Drawings made to order. Repairing of all kinds promptly attended to. Blacksmithing executed all its branches.

IMPROVED GAGE COCKS
Simple, Durable and Efficient.



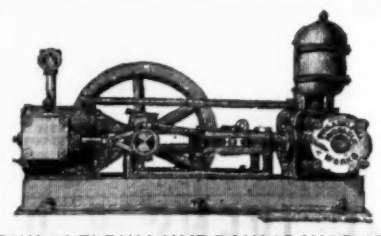
Automatic Damper Regulator
FOR STEAM BOILERS.
SAFETY, ECONOMY & DURABILITY.
MURRILL & KEIZER, Baltimore.
Agents Wanted. Send for Circulars.

P BLAISDELL & CO.,
WORCESTER, MASS,
Manufacturers of the



'BLAISDELL" UPRIGHT DRILLS,
And other First-Class Machinists' Tools.

HENRY BLUNDELL & CO.,
MACHINISTS,
And Manufacturers of
JEWELERS' TOOLS
of every description.
BRASS FOUNDERS & FINISHERS.
Barry's Steam Cylinder Packing
PATENTED JUNE, 1872.
LITTLE'S PATENT CART HOIST.
For State Rights, and Rights to manufacture, or further information, address
Nos. 98 to 106 Orange, & 63 to 69 Peck St., PROVIDENCE, R.
Price List sent free on application.



PHILADELPHIA HYDRAULIC WORKS
Evelina Street, east of 3d Street, below Walnut, Philadelphia, Manufacturers of Steam Pumping Machinery
of every description. Send for Illustrated Price List

MACHINISTS' TOOLS.
12, 15, 16 and 18 inch
Swing Screw-Cutting Engine Lathes and
PATENT FRICTION PULLEYS,
Star Tool Co., Providence, R. I.

TUBAL SMELTING WORKS,

760 South Broad Street, PHILADELPHIA.

PAUL S. REEVES,

MANUFACTURER OF

ANTI-FRICTION METALS

OF VARIOUS GRADES.

XXX	Metal Nickel Hardening	55 cts. ℔
XX	Metal Nickel Hardening	50 cts. ℔
X	Metal Copper Hardening	45 cts. ℔
A	" " "	40 cts. ℔
B	" " "	35 cts. ℔
C	" " "	30 cts. ℔
D, E, F	These metals are alloys of lead, with a large percentage of tin, antimony and copper, according to price.	25 cts. 20 cts. 18 cts.
G, H, I, J	These metals are the ordinary low priced Babbitt alloys, used where there is not much wear on the machinery, and where economy is required.	16 cts. 14 cts. 13 cts. 12 cts.

BRASS CASTINGS.

Of all qualities of metals, 28 to 45 cts. ℔. Pig Brass, 23, 25, 28, 31, 36, cts ℔. Importers of Block Tin, Lead, Antimony, Spelter, Crucibles, etc.

S. A. WOODS MACHINE CO.,

Manufacturers of

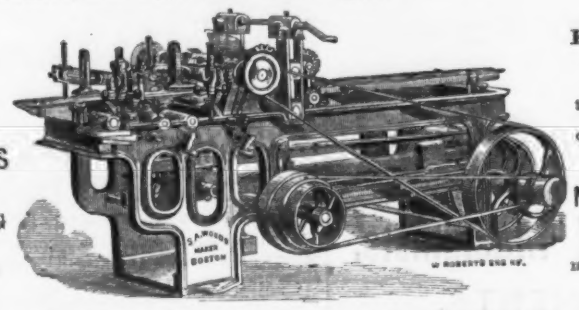
Planing, Tonguing and Grooving Machines.

Moulding Machines and Dimension Planers a Specialty.

We also deal in all kinds of **Wood Working Machinery, and Iron Tools, Steam Engines and Boilers, Shafting, Pullies and Hangers.**

ALSO,

SOLID EMERY WHEELS AND GRINDING Machines.



PLANER KNIVES to fit any machines.

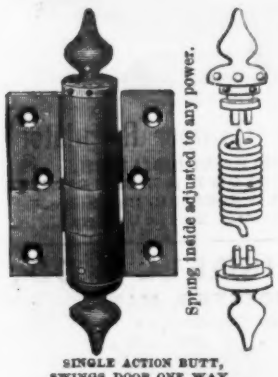
MOULDING Cutters made to order.

Also agents for **Bradley's Cushioned Hammer.** Send for Circulars and Price List.

Machinery Depots, 91 Liberty Street, N. Y. 67 Sudbury Street, Boston, Mass.

THE

American Spiral Spring Butts



SINGLE ACTION BUTT, SWINGS DOOR ONE WAY.

Swing doors either way, allowing continual passing, and close them promptly, without noise.

Invaluable in cold weather, and in summer can be used as ordinary hinges.

W. ROBERTS SC.

Noiseless Double Action Butt, as seen upon the door, swinging it both ways.

Very Desirable

FOR

Stores, Banks & Churches.

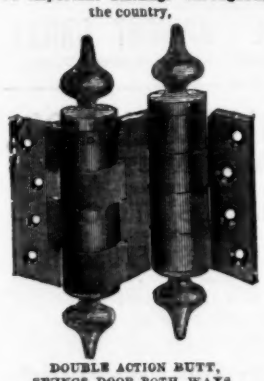
AND ALL

Outside Winter Doors.

Used in the

National Capitol, Patent Office, Treasury, Plymouth Church, A. T. Stewart's Stores, Booth's Theatre,

nd important buildings throughout the country,



DOUBLE ACTION BUTT, SWINGS DOOR BOTH WAYS.

Prices Greatly Reduced, Oct. 1st., 1873.

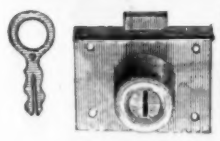
Single Action.			Double Action.		
4 in.	No. 6	$2 00	4 in.	No. 50	$4 50
5 "	" 11	3 00	6 "	" 52	6 50
6 "	" 16	4 00	7 "	" 54	9 50
7 "	" 22	5 00	8 "	" 56	12 50
8 "	" 26	6 50	8 "	" 57	12 50
10 "	" 31	8 50	10 "	" 60	16 00

Send for Descriptive Circular and Price List.

AMERICAN SPIRAL SPRING BUTT CO., 27 Park Row, New York.

AMERICAN LOCK CO., Cazenovia, N. Y.

Manufacturers of FINE



Store Door, Drawer and Pad Locks and N't Latches,

Containing 30 or more Springless Tumblers affording great security.

Pugsley & Chapman, 6 Gold St., N. Y. Also, manufacturers of **Wheelbarrows and Store Trucks,** and Hardware Dealers. Send for Price Lists. A full line of goods in stock.

PUGSLEY & CHAPMAN,
No. 6 Gold St., N. Y.

THE IVENS & BROOKE PATENT

ECCENTRIC GEARED

POWER PRESS

For Punching, Shearing, and Stamping Metals.

Irregular motion of Crank-Shaft corrected by Eccentric Gear.

Saves 50 per Cent.

In wear of Dies and Punches and time lost in changing them. At **same speed** with the old Press, this gives **double the time** to adjust the work, insuring accuracy and greater production.

The Patent Adjustment warranted **Positive** under all pressures, and susceptible of the nicest shade of variation.

MANUFACTURED BY

AMERICAN SAW CO.,

TRENTON, NEW JERSEY.

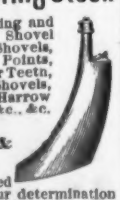
Send for Descriptive Circular.

SUCCESS

TRADE MARK.

BEYOND COMPETITION.

Nellis' Process in Tempering Steel.



For Mould Boards, Walking and Riding Cultivator Shovels, Shovel Plow Blades, Reversible Shovels, Oval and Flat Diamond Points, Rolling Coulters, Cultivator Teeth, Cotton Sweeps, Turning Shovels, Bull Tongues, Scooters, Harrow Teeth, Whiffletree Clips, &c., &c. In fact everything in the

Agricultural, Steel & Iron Lines,

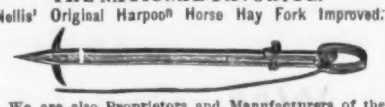
In which we are prepared to supply the most *intricate* wants. Our determination to give the trade the most superior article and quality has compelled us, for the past three years, each year to double our capacity, which should be a sufficient guarantee of the unrivaled merit of our production.

Soliciting the knowledge of your wants, we remain, yours, respectfully,

A. J. NELLIS & CO., Pittsburgh, Pa.

THE NATIONAL FAVORITE.

Nellis' Original Harpoon Horse Hay Fork Improved.



We are also Proprietors and Manufacturers of the Nellis' Original Harpoon Horse Hay Fork, Nellis' Grapple, and Nellis' Pulley.

Steam Safety Elevators, Hand Hoisting Machinery,

SELF-CLOSING HATCH DOORS.

GEO. C. HOWARD, 17 S. 18th St., Phila., Pa.

Wm. & Harvey Rowland,

Manufacturers of

NORWAY SHAPES,

Springs and Steel,

Frankford, Philadelphia.

WAR!!

Every Mouse in the World to be EXTERMINATED!

Each Mouse caught resets the Trap for another.

TUBULAR AND OTHER LANTERNS. BRASS AND IRON JACK CHAIN. FOR SALE BY THE TRADE.

R. E. DIETZ,

Patentee and Manufacturer,

54 & 56 Fulton, and 29 & 31 Cliff St., NEW YORK.

WM. ESTERBROOK,

Wholesale Manufacturer of

Coal Hods, Fire Shovels, etc.,

311 Cherry St., PHILADELPHIA.

KEUFFEL & ESSER,

Importers and manufacturers of

MATHEMATICAL INSTRUMENTS,

Hard-rubber Tools, Drawing Papers, Scales, T Squares, Tapes, Chains, Colors, Etc.

Send 10 cents for illustrated catalogue.

116 Fulton Street, New York.

Stretches the wire each way, is tightened with a common wrench, is self-fastening at each half turn of the spindle. Warranted for strength and durability. Sold at hardware stores generally. Byington & Northup, sole manufacturers, Rochelle, Illinois.

USE THE

BEST IN THE WORLD.

FOR SALE EVERYWHERE

Samples free to Sextons and Janitors of Public Buildings.

LOOSE POLISH FOR STOVE DEALERS & THE TRADE.

No more Hot Journals or Bearings by using

Plumbago Lubricant,

FOR ALL KINDS OF

MACHINERY, CAR AXLES, &c.

NEW YORK BLACK LEAD WORKS,

172 Forsyth Street, New York.

Plumb, Burdict & Barnard,

BUFFALO, N. Y.

MANUFACTURERS OF

BOLTS

COACH SCREWS,

SKEIN BOLTS,

CARRIAGE BOLTS,

TIRE, SLEIGH SHOE,

Machine and Blank Bolts.

FERNALD & SISE, N. Y. Agents, 100 Chambers St.

COFFIN TRIMMINGS,

MANUFACTURED BY

WAYNE HARDWARE CO.,

124 Main Street, CINCINNATI O.

Elmira Nobles Mfg. Co.,

Manufacturers of

WATROUS" SHIP & CARPENTERS' AUGERS,

Adjustable Handled Drawing Knives, Axes, &c.

ELMIRA, N. Y.